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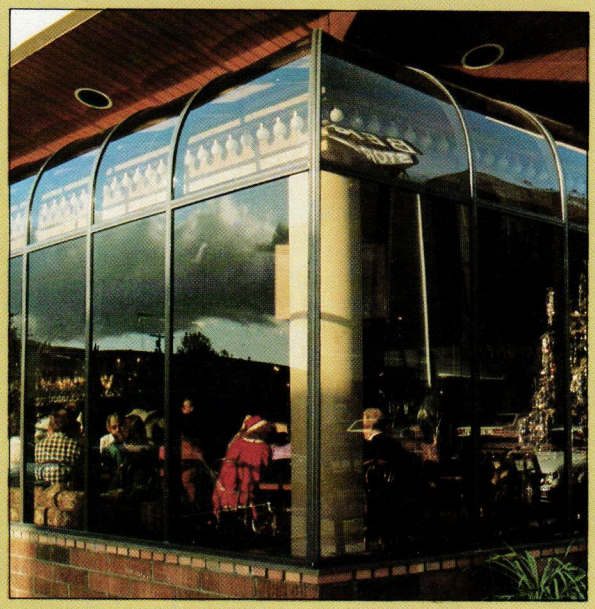

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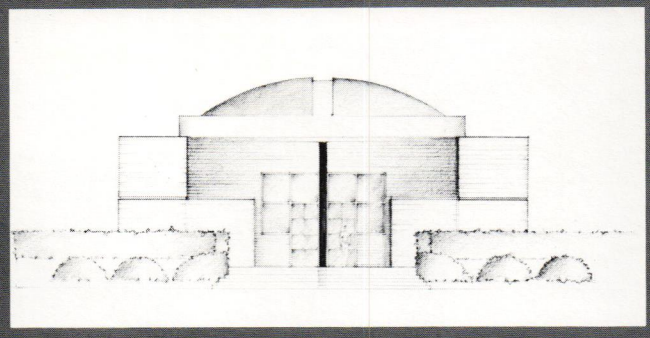

DEPARTMENTS

COVER: Coalinga. Photographer: Janice Fillip.

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Christopher Arnold, AIA

'Quake!

On the second day after a 6.5 earthquake rocked Coalinga on May 2, 1983, a CCAIA-sponsored team of architects and engineers visited the San Joaquin town to assess the damage and help local leaders identify potentially dangerous buildings.

The most startling impression we received was the contrast between the extensive damage to the older structures and the excellent performance of any building with even minimal attention to seismic design. The one story concrete city hall and hospital, the seismically upgraded high school, and newer banks, markets and automobile showrooms all suffered only minimal damage. The unreinforced masonry structures, similar to those found in most California towns, were devastated.

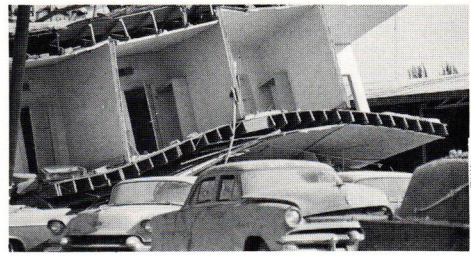
In the residential areas, almost every house with floors supported on unbraced cripple stud walls slipped sideways of its foundations with accompanying distortions of walls and porches. In the newer homes, the only weakness was that of insecurely attached brick chimneys.

Members of the exploratory team included Paul R. Neel, AIA, Warren D. Thompson, AIA, Robert Hench, AIA, Tony Pings, AIA, Paul Welch, Jr., structural engineers Kim Sera and Bud Greulich, and me.

—Christopher Arnold, AIA

Janice Fillip

Christopher Arnold, AIA



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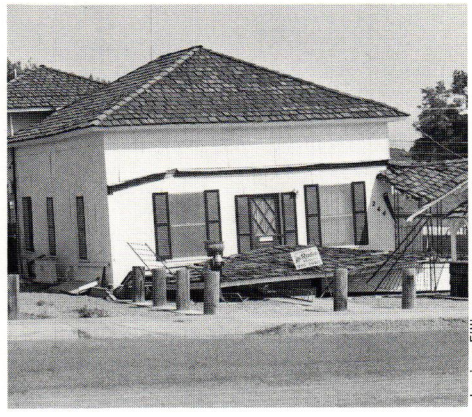

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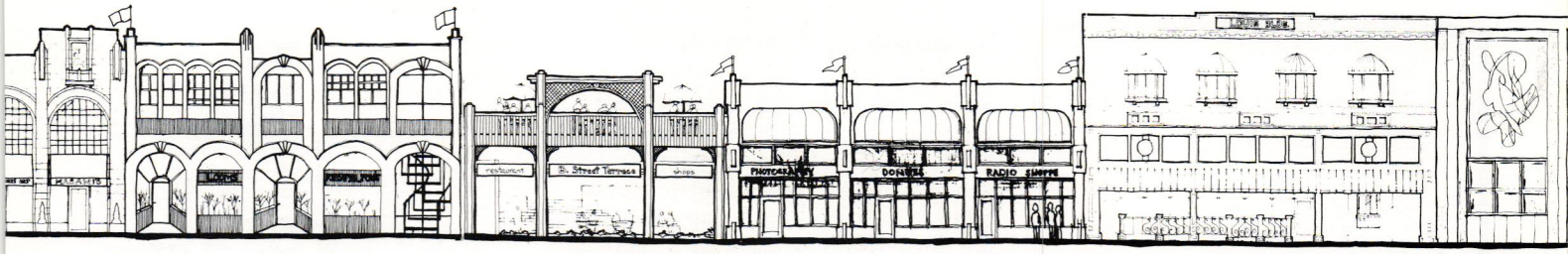


B Street Charrette

Proposing design ideas to stimulate a facelift of downtown storefronts was the initial program of the B Street Charrette, sponsored jointly by the San Mateo Downtown Redevelopment Advisory Committee, the newly-formed San Mateo County Chapter, AIA, and Greater Downtown San Mateo, Inc., a merchants' group. But the three design teams soon expanded the program to address broad issues of urban design. By the end of the day-long charrette, the City of San Mateo was presented with comprehensive, well-documented guidelines for revitalizing a flagging business district.

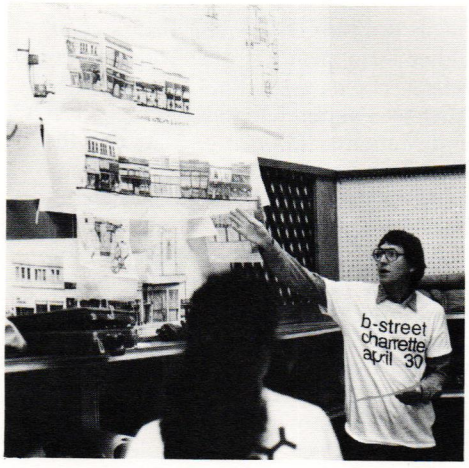
B Street, between Second and Third Streets, is a mixture of commercial and retail ventures, housed in undistinguished buildings. Facade treatments proposed by the design teams emphasized the self-expression of the few examples of architecture that do exist—notably an Art Deco mid-block building, and a 1920s terra cotta and tile structure which anchors one corner—while unifying the remaining facades with awnings, signs and landscape elements. A blueprint for adding second stories to accommodate future growth also was provided.

The east side of B Street is bisected by a concrete ramp leading to the second story of a parking garage that parallels B Street. Tracks for the Southern Pacific Railroad abut the garage to the east, making the concrete structure a demarcation line between commercial San Mateo and the "other side of the tracks."

Although ample parking is available in the garage, most spaces remain vacant. Security is such a problem that an announcement was made during the charrette advising people who'd parked there to move their cars onto the street. Parking emerged as the primary concern of local merchants, who initially balked at Team A's idea of eliminating street parking to landscape a small outdoor area where rambling shoppers could gather to eat and relax.

Team A recommended converting the ramp into a terraced walkway to encourage pedestrian traffic into the second level of the garage, which would continue to have vehicular access on Second and Third Streets. The landscaped terraces with a water element and some small specialty shops were proposed to help secure the garage by enlivening the entire area. The ramp which now interrupts pedestrian traffic on B Street would convert into a tiny urban park in the center of the retail district.

The underside of the ramp and the block of buildings overshadowed by the garage was the study area of Team C. Two delicate terra cotta buildings are sandwiched between two rows of bland



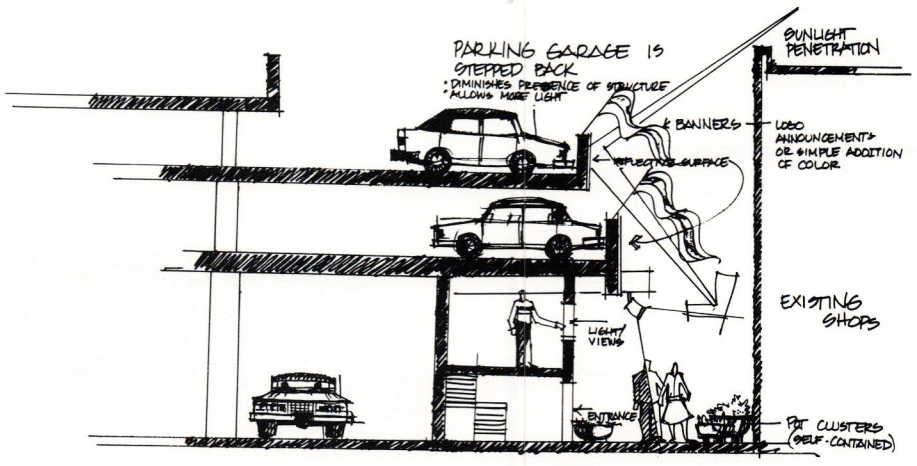
buildings on Main Street. Team C suggested a mural to replicate the terra cotta detailing on neighboring facades. A landscaped arcade filled with small shops was recommended for the area under the ramp to draw foot traffic to the garage.

Team C further proposed that when more levels were added to the garage, they be terraced back to allow light and air into the space. Finally, the Team suggested a tower be erected on top of the garage to create a focal point for the B Street retail area in the city's skyline, and to serve as an outdoor concert area. Team leader George Sinclair, AIA urged that, once the renovation of the area was complete, its former use be commemorated with a statue of an artifact unearthed in the study area: a Thunderbird wine bottle wrapped in a brown paper bag.

Team B addressed issues of traffic flow and planning for an "Old San Mateo" district along B Street. A parking spine was proposed to link existing parking structures and create a secondary circulation pattern for cars that would relieve congestion and pollution on the street level. Rerouting vehicular and foot traffic generated by the Southern Pacific train stop, a busy commuter line connecting San Francisco with the Peninsula's bedroom communities, was proposed to prevent continued blockage of Third and Fourth Streets and to lure train passengers into the Old San Mateo District.

Guidelines for the proposed Old San Mateo district urged that specific areas be zoned to control growth. An office park and mixed use residential/commercial area was recommended to connect downtown San Mateo to Freeway 101. Highrise construction along the freeway was suggested to give San Mateo a landmark skyline to catch the motorist's eye. The mixed use development would upgrade the seedy area that now exists between B Street and the freeway, improving security for B Street merchants and shoppers.

—Janice Fillip



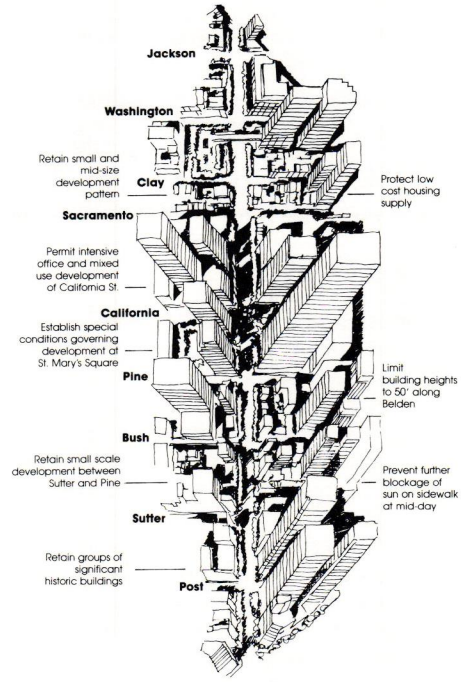
Downzoning Kearny Street

The problem of high rise development has become most acute in the city of views and vistas—San Francisco. A building boom, spurred by an estimated yearly demand for two million square feet of office space, threatens to spread out from the downtown financial district and engulf the city's unique neighborhoods.

To confront this issue, the city's Planning Commission unanimously accepted a report which advocates drastically downzoning Kearny Street. An Urban Design Assistance Team of The American Institute of Architects, San Francisco Chapter, wrote the report in an intensive weekend workshop modeled after National AIA's R/UDAT program. "People were amazed at the amount of work that came out of a fast weekend of analysis," said Jacob Robbins, FAIA, the Team's chair. Other Team members were Thomas Cooke; Jeffrey Heller, AIA; Rai Okamoto, FAIA; Michael Painter; George Rockrise, FAIA; and Margaret Woodring, AIA. The Task Force is part of a continuing Chapter effort to assist in establishing design guidelines for San Francisco.

Kearny Street was chosen as the subject of the report because it serves both as an important link between North Beach and the South of Market/Moscone Convention Center areas, and as a boundary line between the retail shops of Union Square/Chinatown and the downtown business district. This dual role as link and boundary gives the corridor special visual and functional importance.

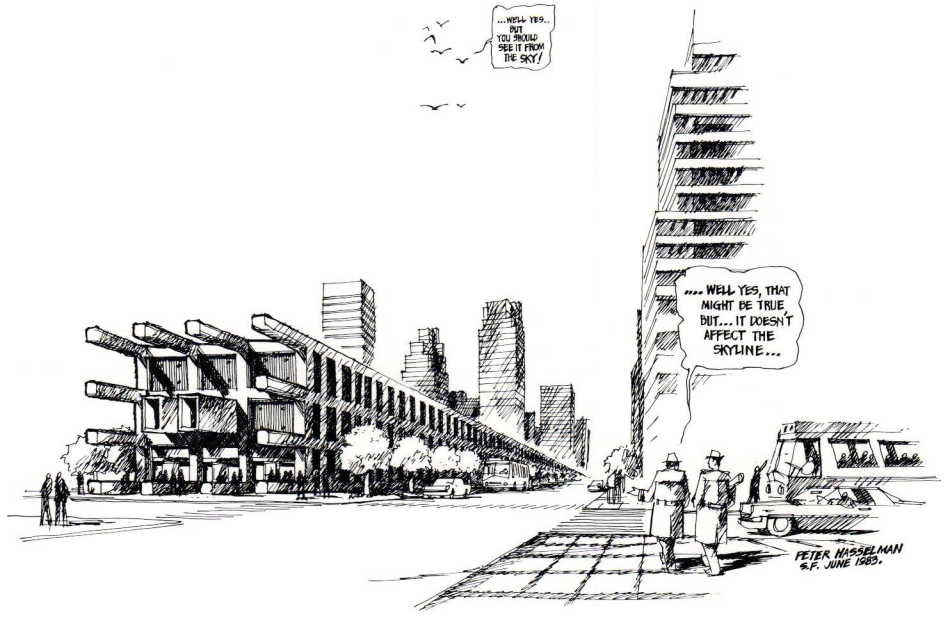
Because of Kearny Street's popularity with pedestrians, the report emphasizes the need to enhance and preserve the characteristics of this broad, sunny thoroughfare by setting height limits for future development. The report concludes



that if high rise construction is allowed to go on unabated, it will increase traffic congestion and block out much of the sunlight which sets Kearny Street apart from the cavernous Montgomery Street just one block east. These expressed concerns for sunlight augment the Planning Commission's own sun access regulations, currently being prepared for the city.

In setting the controversial height limits, the Team took into account such factors as the height of already existing structures, current use, ethnic make-up and cultural heritage of the corridor. The report divides Kearny Street into four height segments:

1) From Washington to Sacramento streets, the report recommends a 50 foot



Peter Hasselman, AIA

height limit and continued mixed use, with retail shops at ground level and residences on upper floors. This segment, on the outer perimeter of San Francisco's historic Chinatown, has the flavor of a city neighborhood even though it is located just blocks from downtown. In a city where the vacancy rate for housing is two percent, the report encourages the city's planners to keep their commitment to build low-income housing to replace the now leveled International Hotel, site of housing protests during the '70s.

2) On Kearny Street from Sacramento to Pine a height limit of 200 feet, the maximum height limit in the report, is recommended for an area already occupied by high rise buildings, including the 778 foot high Bank of America tower. The report suggests that specific guidelines be set for the two remaining developable parcels that would exchange height limits for expansion and improvement of nearby St. Mary's Park. The guidelines also show how proposed buildings could be constructed to allow maximum sun exposure to the park.

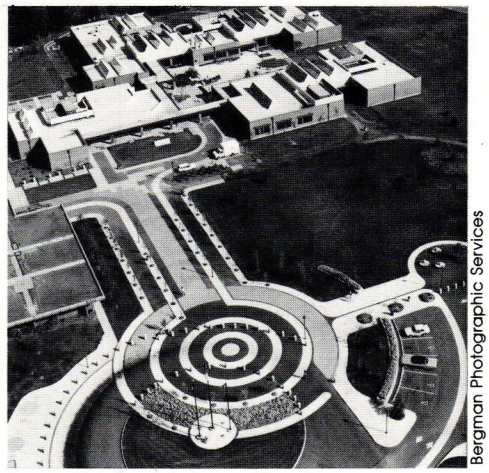
3) From Pine to Sutter streets, a 50 foot height limit is proposed for an area now occupied by historic buildings, some constructed just after the 1906 earthquake and fire. New building designs are encouraged to maintain the proportions, scale and appearance of adjacent structures. The report also recommends new signs and facade improvements to restore the buildings to their original character.

4) Several historic buildings give Kearny Street, from Sutter to Market, a turn-of-the-century San Francisco appeal. But a height limit of 120 feet was suggested for this area to match the scale of the new Crocker Bank headquarters.

Since Kearny Street is one of the most heavily walked streets in the city, the report adds ways to make the street safer and more attractive: repaving the sidewalks with a uniform, nonskid surface; replacing street lights with decorative, historic light poles; planting New Zealand Christmas trees; and, where tree planting is impractical, installing awnings. Although small in themselves, these improvements taken as a whole would give the corridor a revived look, and could be phased for easier funding.

Overall, the AIA proposal calls for keeping Kearny Street modest in scale and gracious in tone. While the Planning Commission's actions are not legally binding, in the words of the Commission President Toby Rosenblatt: "This is only a starting point. These are ideas which we will use. There will be a continuing public process. (But) we are going to pay attention to this document."

—Kelly Collins



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Linus Pauling Science Center.

The East Bay Chapter of the American Institute of Architects presented twelve Honor and Merit awards at its 1983 Design Awards program. MLTW/Turnbull Associates of San Francisco received the First Honor Award for the Cakebread Cellars Winery in Oakville. Honor Award recipients include Swatt & Stein of Berkeley for the H.I.S. Building in San Francisco; William R. Dutcher, AIA for the Leonard Residence in Occidental; Charles Stickney, AIA of Oakland for the Seeley G. Mudd Building at the Pacific School of Religion in Berkeley; Hawley, Stowers & Associates of San Jose for the World Savings & Loan Building in Pleasanton; and Peters, Clayberg & Caulfield of San Francisco for the St. Mary's Gardens Housing Development in Oakland. Merit Award winners are ELS Design Group of Berkeley for the Energy Efficient State Office Building in San Jose and for the U.S. Embassy Staff housing in Manila; Fisher-Friedman Associates of San Francisco for the Civic Executive Center in Walnut Creek; Sam Davis, AIA of Berkeley for the Pajaro Solar Condominiums in Davis; Shen/Glass Architects of Berkeley for alterations to 381–383 Adams Street in Oakland; and ROMA Architects of San Francisco and Barrentine Bates Lee of Lake Oswego, Oregon, for the Linus Pauling Science Center at Clackamas Community College in Oregon City, Oregon. Judges for the Awards program were Thomas Vreeland, FAIA; Robert J. Frasca, FAIA; and John Dreyfuss.

State Architect Appointed

Whitson W. Cox, FAIA of Sacramento was appointed State Architect by Governor George Deukmejian. Using established selection procedures, Cox plans to contract with private firms for the major portion of architectural design services needed by the State, while maintaining a sufficient staff at OSA to design and manage those projects not practicable for assignment to private firms. "It is my sincere belief that the design of public buildings erected for the common good

by tax funds implies a special commitment to excellence," Cox said. "The image they project should represent our collective thought and our best example."

Correction

The Toyota National Headquarters, USA, which received an Award of Excellence from the California Building Officials (*Architecture California, May/June, 1983),* was designed by Jeffrey Kalban, AIA and Douglas Greene, not by William M. Akiyama, AIA, who was the project manager. Also, Saint Anne's Home in San Francisco was designed by Derek Parker, AIA of Anshen & Allen. Appleton and Associates designed Boyd Street Place.

Public Service Awards

Four California architects received a Public Service Award from the California Council, The American Institute of Architects for extraordinary service to their community or the public at large.

George Dolim, AIA, president of the San Francisco firm Hertzka & Knolls, was recognized for his efforts on behalf of the United Cerebral Palsy Association.

Delmer Beckhart, AIA, a principal in the Los Angeles firm of Harrison, Beckhart & Mill and president of the Architects and Engineers Collaborative Corporation, was recognized for his leadership of the Grandview Foundation, a nonprofit organization operating rehabilitation residences for male indigent alcoholics, and the Grandview Food Bank.

The activities of Ron Yeo, FAIA of Corona del Mar, range from developing and advocating solutions to affordable housing, downtown deterioration, transportation, and open space in Orange County, to coordinating the cultural efforts of 28 cities and 400 cultural groups and business leaders throughout the county.

Harold Sadler, FAIA, president of Tucker, Sadler & Associates in San Diego, was recognized for a broad range of community activities, including service on San Diego's Housing Advisory and Appeals Board, the Review Committee, and the City of San Diego's Facilities Committee.

Public Works Aren't

The nation's public facilities are crumbling faster than they are being repaired. Studies indicate that a quarter of the interstate highway system is past its designed life and must be rebuilt, and one-fifth of all bridges have decayed so badly that they must be rebuilt, or abandoned. California's public works have fared better because of newer construction and an active maintenance program. But, in the wake of this year's wet winter, 14 percent of the state's high-

way system alone needs major repair.

The nation must spend $400 billion by 1990 in order to remedy existing conditions and meet future needs, according to a recent Congressional Budget Office study. This figure is far below previous estimates that put infrastructure needs in the $1–3 trillion range. CBO Director Alice Rivlin says that while resources needed are substantial, the situation is manageable. Heavier reliance on user fees, retargeting federal funds toward projects that give national benefits, and stressing repair and maintenance over new construction will expedite the nation's recovery task, according to Rivlin.

The CBO report represents "very soft estimates," according to Brian Connor, professional staff assistant to Rep. Bill Clinger (R-Pa.), whose proposed capital budget bill currently is pending in Congress. The study addresses only those projects that are "directly critical" to the nation's economy and excludes prisons, fire stations, police stations, schools, hospitals, and industrial facilities.

Government spending for infrastructure was 1.7 percent of the GNP in 1982, compared with 4.2 percent in 1965. As federal money dries up, the burden falls on the state and local levels, where general maintenance funds are being eaten away as quickly as the infrastructure itself. Douglas Fraleigh, Deputy Director of Public Works for Sacramento County, likens the situation to buying a car and then not maintaining oil checks and tune ups. "When you keep deferring maintenance, the long-term effect is that you pay a higher price," he says. With available money plugged into repair rather than development, the whole economy suffers, Fraleigh adds.

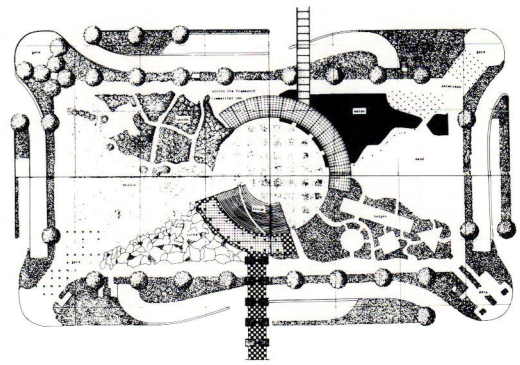
The American Institute of Architects is urging Congress to improve legislation on the nation's infrastructure. Speaking before the Senate Committee on the Environment and Public Works, AIA Executive Vice President David Meeker, Jr., FAIA said that repair and revitalization of the nation's public works and infrastructure systems is "fundamental to this country's continued economic and social development." For every on-site public works construction job, he testified, three additional jobs are created in other sectors of the economy.

Generally people don't realize how the private sector economy is connected to the public sector. "Slowly business is coming to realize the economic impact it has on them if we continue to underinvest," says Connor. He points to the recent example of the U.S. Steel plant in Pittsburgh that loses $1 million a year since it had to re-route trucks because of an eroded bridge. "The steel industry as a business finally became aware of what bridges and good transportation meant to their economy."

The recently-enacted gasoline tax bill and the "jobs bill," initially seen as potential sources of infrastructure revenue, will provide only partial and temporary funding, according to Rep. James Jones (D-Oklahoma) and Senator Richard Lyons (R-Indiana). State and local governments will be forced to find alternate sources of revenue to cope with their infrastructure needs, said both legislators, who spoke at a recent Urban Land Institute workshop on infrastructure. Current proposals pending before Congress include federally funded state infrastructure banks, a federal capital budgeting process, and a reconstruction finance bank.

But more creative thinking may be needed to shore up the nation's public works. Japan successfully solved its infrastructure funding problem 38 years ago when *takara-kuji* was instituted. The proceeds of *takara-kuji,* a national lottery, fund a wide range of local government public works construction projects. In the last five years, the lottery has returned the equivalent of over $1.31 billion to local government.

–Barbara Smith



First prize in the second annual Student Design Competition, sponsored by the Los Angeles Chapter, AIA, was awarded to Joel Weber, a student at UCLA. The program for the competition was to redesign Pershing Square in downtown Los Angeles to make it "a useful and meaningful public place in the urban life of the city." Weber's design incorporates a circular central plaza surrounded by earth berms and freeform walkways with seating areas and landscaping. Other winners in the $2,500 Pereira Prize competition were Jeff Dunning of Cal Poly, Pomona, second place; Cynthia Mozza of USC, third place; and Jean Burton of UCLA, William Reed of USC and Georgina Smith of USC, honorable mention. Judges of the competition were Arthur Golding, AIA; Calvin Hamilton, Los Angeles city planning director; Edward Helfeld, administrator of the City Redevelopment Agency; Fred Lyman, AIA; and Carl Maston, FAIA. Martin Gelber, AIA chaired the Jury.

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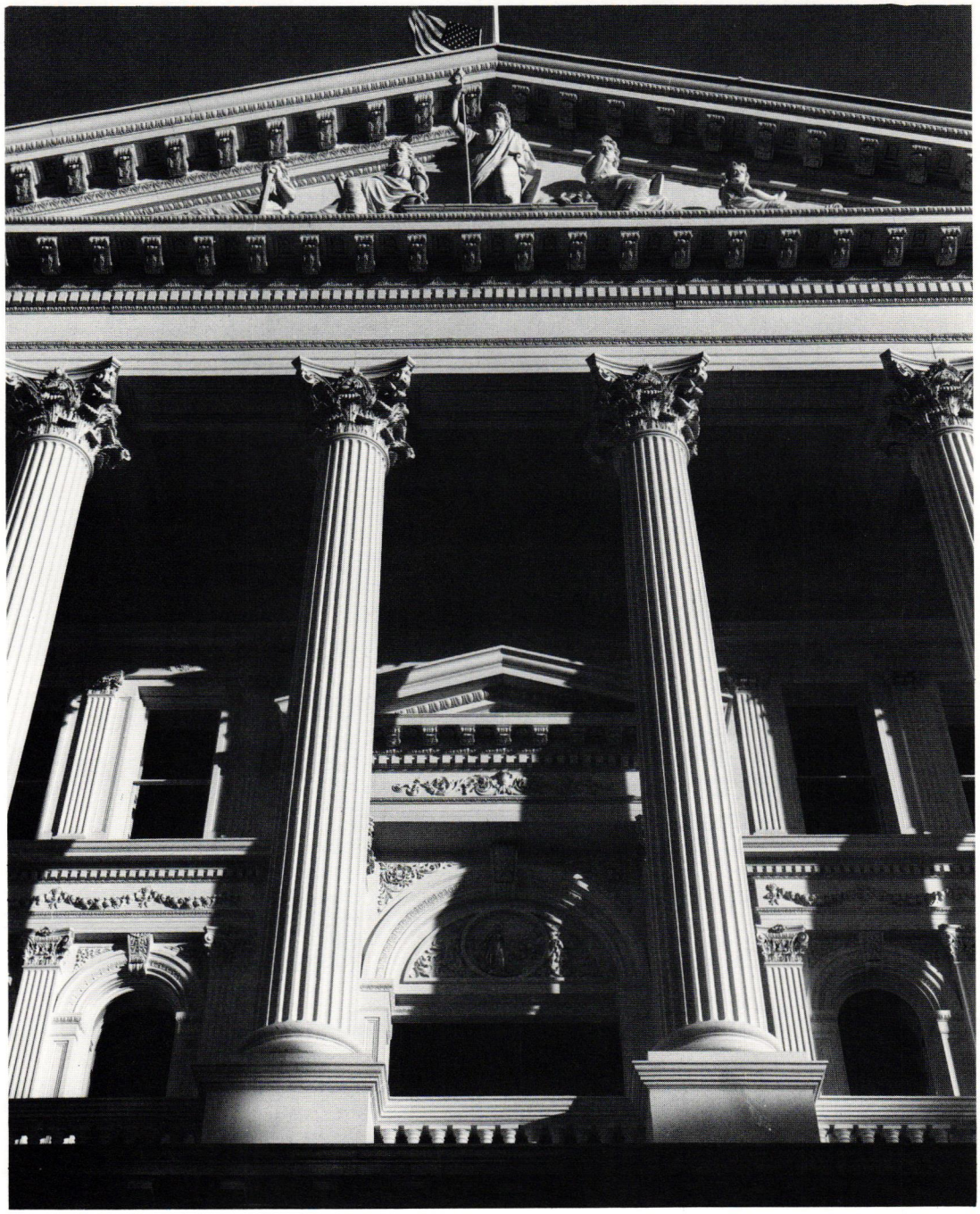
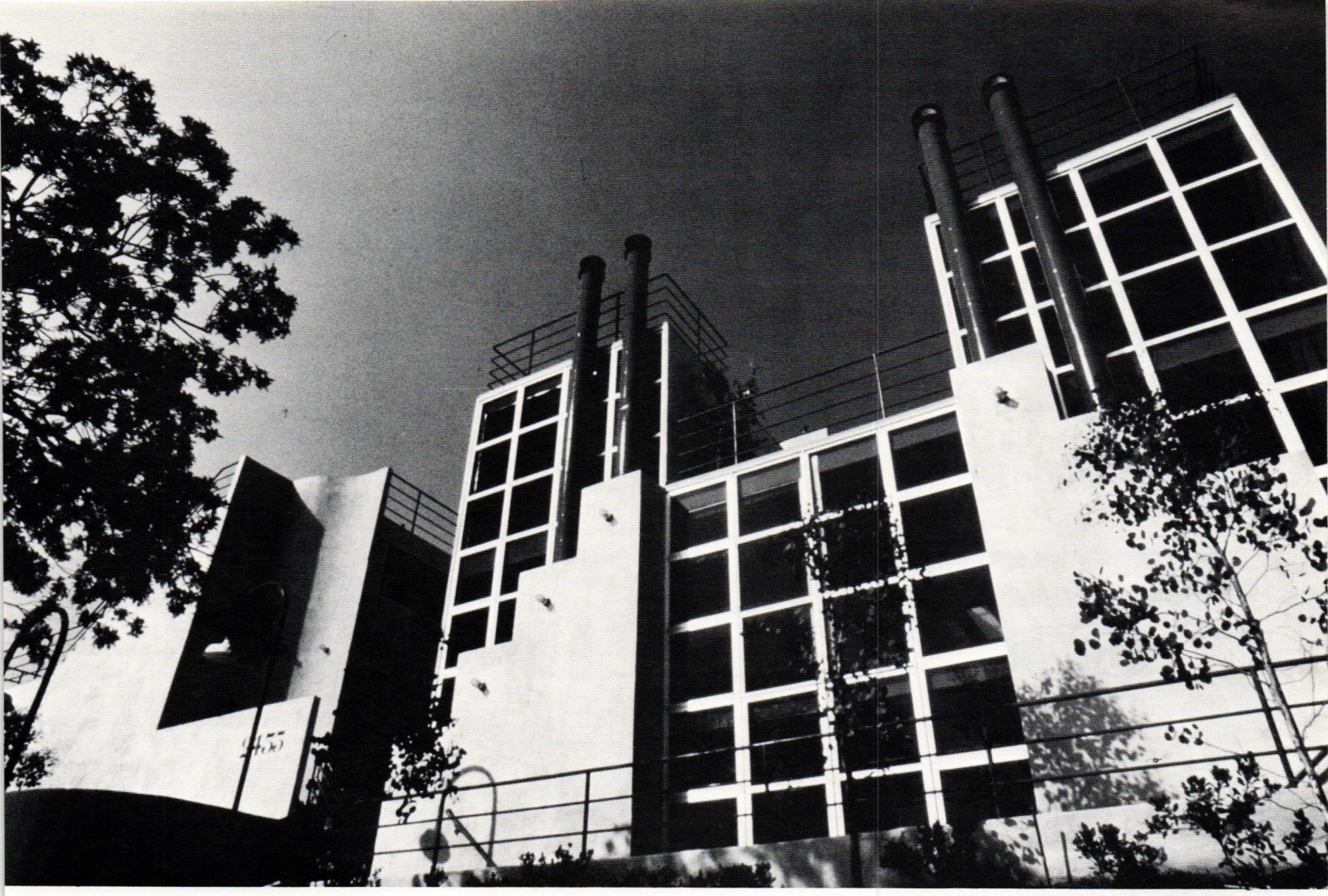
AIA Honor Awards

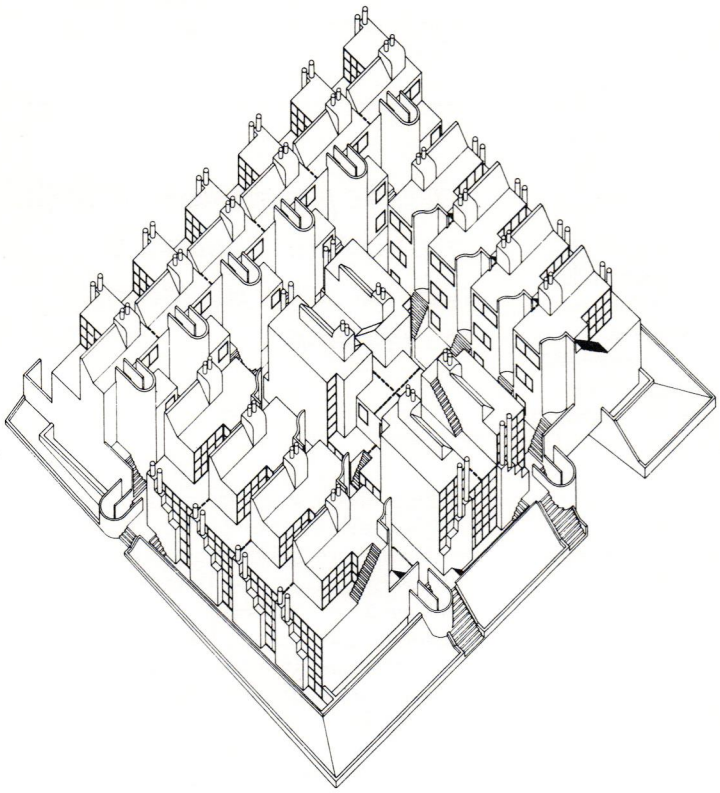


California State Capitol, Sacramento

Jury Comment: The California State Capitol reconstruction and restoration is a notable example on a major scale of cooperation among architect, structural engineer, historian, earthquake consultant, owner's representative and contractor. In returning the 100 year old Capitol to its 1900–1910 architectural character, the team paid particular attention to period authenticity while observing the strict guidelines of function and safety. What was once a deteriorating seismic hazard is now a magnificently restored tribute to the virtues of preservation and extended use in American buildings.

1983 Honor Award
Architect:
Welton Becket Associates.
Historical Consultant:
Raymond Girvigian, FAIA.
Owner:
Joint Rules Committee, California State Legislature.
Owner's Representative:
John C. Worsley, FAIA.
Structural Engineer:
URS/John A. Blume & Associates.
Mechanical and Electrical Engineer:
Welton Becket Associates.
Landscape Architect:
State Landscape Architect.
General Contractor:
Continental Heller Corp./Swinerton & Walberg Co.
Photographer:
Marvin Rand.





Suntech Townhomes, Santa Monica

Jury Comment: As a response to the need for attractive, high density housing on a small urban site, the design for Suntech Townhomes offers an unique solution, a fresh note. The density of 36 units per acre is countered effectively by a consistency of design aesthetics throughout. From roof to garage entrance, every railing, light pole and walkway is articulated to reflect the architect's thematic intention. Pedestrian bridges, rooftop communal areas, private decks and a row-house arrangement that reinterprets the intimacy of narrow city streets confirm the project's sensitivity to its occupants. Suntech Townhomes exhibit the careful planning and complete involvement of their architect-owner-builder.

1983 Honor Award
Architect:
Urban Forms: Project Architect, Steve Andre; Designers/Draftsmen, David Van Hoy, Steve Andre, Steven Kanner, Richard Raymer.
Developer:
Urban Forms/John Kaufman.
Color Consultant:
Tina Beebe.
Structural Engineer:
Steve Mezy.
Mechanical Engineer:
Richard Felix
Electrical Engineer:
Art Patton.
Landscape Architect:
Emmet Wemple.
General Contractor:
Urban Forms.
Photographer:
Glen Allison.

COMMENTARY

Notes on Architectural Education

by Joseph Esherick, FAIA

Architectural education, as a formalized undertaking in an institutional setting, is a relatively recent phenomenon. Until well into the 19th century, apprenticeship or "articled pupilage" in an architect's office was the usual first step toward professional practice.

Early architectural education in the United States was strongly influenced by the systematic methods of the Ecole des Beaux-Arts (1797). Indeed, the first two architectural education institutions in America were the ateliers of Richard Morris Hunt, founded in 1857, and Henry Hobson Richardson, 1866, both based in part on the Beaux-Arts scheme. In the West, the Architectural School at the University of California at Berkeley began in 1903, those at Oregon and Washington in 1914.

In this country, few architectural schools are based in the Academy (of Art). Rarely independent, the architectural school usually is allied with Art, Humanities, Science or Engineering. Curricular emphases often depend on the location of the architectural school in the larger institutional setting. Schools beginning in Engineering departments, for example, usually retain a healthy and rigorous engineering emphasis, no matter where they move within the university.

Counter to the natural diversity growing out of immediate disciplinary relationships was the pervasive influence of the Beaux-Arts Institute of Design, a quasi-public institution which provided architectural schools with design education services from programs to juries to published critiques of student work. This small group of New York classicists was a powerful homogenizing force in architectural education.

Since World War II, curricula at most schools have undergone tremendous change. Coalitions were formed with other academic disciplines—planning, landscape architecture, sociology, engineering, building science—and the broader notion of "environmental design" as an interdisciplinary activity became widespread. The notion of the architect-teacher as a generalist, teaching history or engineering or construction, gave way to specialists in these fields, and also in the newer social/psychological/behavioral courses, in building science and building physics, planning and public policy, environmental design and planning. Community design (sometimes design and development) or public interest architecture emerged at virtually all schools as a service function of the university and as a practice arm of the school.

Highly qualified experts now teach integrated courses that formerly were seen as "service" courses. Indeed, the level of performance is so high that graduating students are immediately able to bring "state of the art" knowledge to professional practices, particularly in computer aided design, building physics, and energy-related design.

What forces have shaped these changes? Broadly, the profession and the society. Since neither of these is (quite yet) a single monolithic structure, a healthy regionalism has arisen, based on influences from regional climate to regional culture.

"Despite progressive curricula, architectural education still has some obstacles to overcome."

The profession's contributions to change come directly or through faculties of practicing professionals, although the process is frustrated on those rare occasions where the university forbids any outside employment of faculty.

National and international movements, industry and media have had an inevitable influence on perceptions and consequently on educational programs. Social movements such as civil rights encouraged social and behavioral programs; environmental movements led to environ-

mental and ecological design programs; and historic preservation and consumer movements spawned similar courses and sometimes programs. Less visible public trends such as a general litigiousness and demands for an increasing assumption of liability have resulted in expanded courses in environmental and construction law.

Despite progressive curricula, architectural education still has some obstacles to overcome. Architecture remains a dominantly white male enterprise in the schools and out. Affirmative action, increasingly successful in attracting women students, is not so successful in attracting under-represented minorities. Whatever successes can be claimed for student admissions cannot be claimed for faculty appointments.

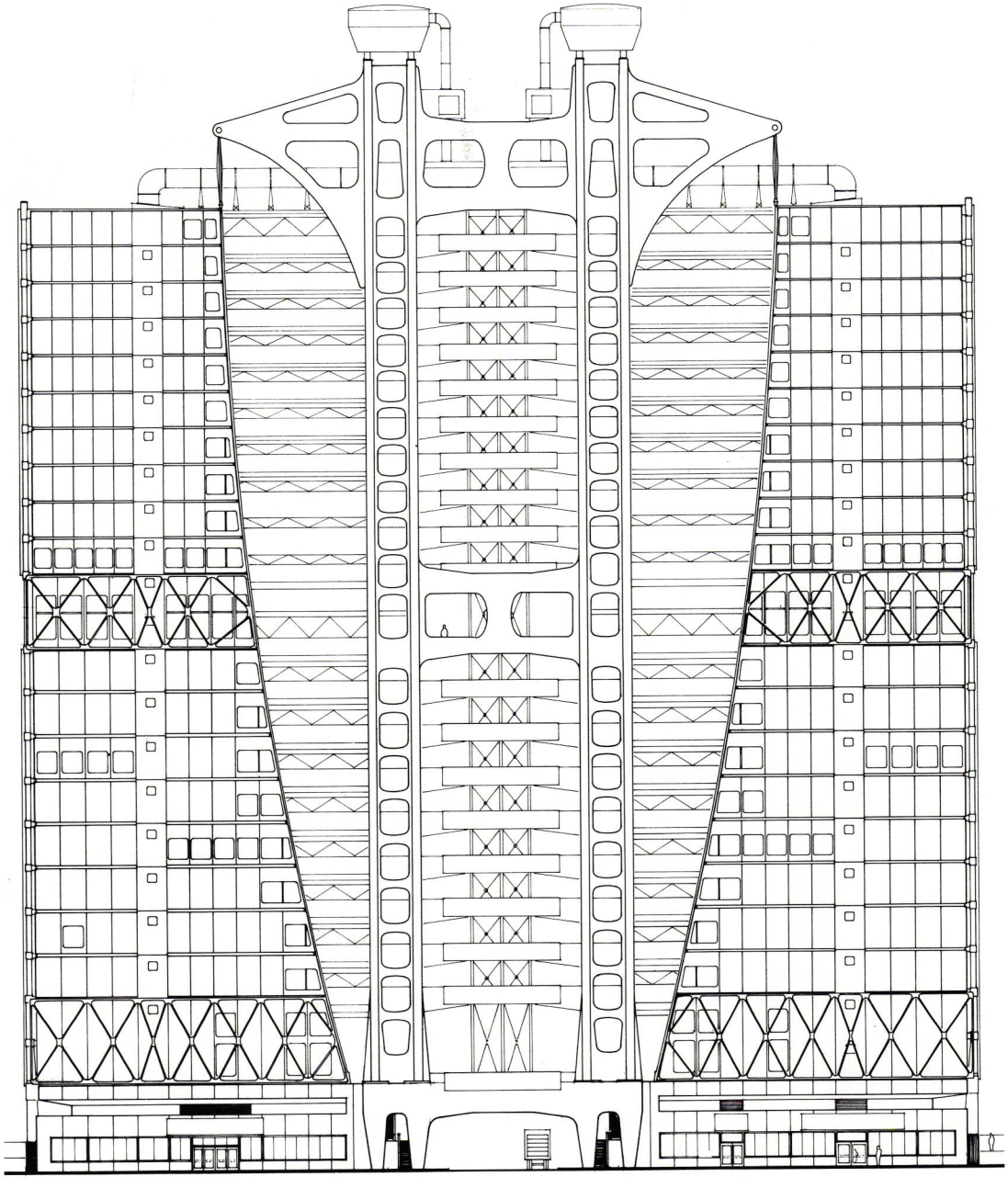
Some current curricula show an infatuation with style and historicism—although this appears to be less a concern with history, and more a lack of imagination and determination to confront real issues, environmental or social. Organizing programs for the development of style is futile. The evolution of design ability and personal style is an inevitable process, but one that, particularly today, is inordinately susceptible to manipulation and to becoming mere fashion.

Now more than ever, the schools need to be vigilant and responsible in evaluating their programs, being certain they—and their students—are adequately satisfying requirements for high professional competence and broad societal needs. And the profession needs to be equally vigilant in its evaluation of what the schools do. Architects need to comment on what they see, and they need to distinguish frankly and honestly between immediate business needs of the profession and its (hopefully) broader social mission.

Joseph Esherick, FAIA is principal in the San Francisco firm of Esherick Homsey Dodge and Davis. A former Chair of the Department of Architecture at the University of California, Berkeley, Mr. Esherick received the Award for Excellence in Architectural Education in 1982.

Graduate School of Architecture and Urban Planning Architecture/Urban Planning Program University of California, Los Angeles

by Harvey S. Perloff and William J. Mitchell



Hope Street Elevation

The project by second year M.Arch. I students in the major building design studio, Winter quarter, 1983, is a speculative commercial complex of 1,800,000 sq. feet of rentable office and retail space at the intersection of 8th and Hope Streets in downtown Los Angeles. The 10 week studio emphasized an understanding of complex issues involving the design of a large scale program in a dense urban context such as traffic, internal transportation, mechanical services, structure and human safety. The students challenged the existing urban design attitude of high rise development with a mid-rise alternative which they deemed a more appropriate prototype for future growth in Los Angeles. Student designers: Mario de Cunha, Mary Beth Elliott, Paul Murdoch, Lorna Tansey, Marc Winnikoff.

The University of California authorized funds to establish a School of Architecture and Urban Planning on the Los Angeles campus in 1957. This followed a study which determined that the quality of the College of Environmental Design at Berkeley would suffer unless more students were absorbed elsewhere, particularly in southern California. Ours was the last new school to be set up on the UCLA campus.

The founding Dean, George Dudley, took up residence in the Fall of 1965, but left three years later, after establishing a two year Master of Urban Design Program. A new Dean, Harvey S. Perloff, was appointed and took residence in the Fall of 1968. By the end of the year, two separate but interrelated pro-

grams were launched: Architecture/Urban Design (folding the Urban Design degree into Architecture) and Urban Planning. Landscape was not included because the program at Berkeley seemed adequate at that time for the state's needs.

Architecture at UCLA is taught in a relatively small graduate school that tries particularly to combine advanced research with good design and sound practice. The Graduate School of Architecture and Urban Planning (GSAUP) is oriented towards providing a relatively modest number of high-level graduates each year. Its mix of Architecture/Urban Design degree programs and the make-up of its faculty reflects a belief in the importance of combining introductory teaching of design and technical skills, advanced professional work, and research and scholarship in the discipline of architecture, so that each activity may inform the other.

Currently, there are 124 students in the three year Master of Architecture I, first professional degree program; 44 students in the two year Master of Architecture II, second professional degree program; and 23 students in the two year Master of Architecture program, which is oriented toward research and scholarship. Beginning in the Fall of 1983, there will be a small number of students in a Ph.D. program in Architecture, which will emphasize original research work.

The course schedule each year consists of a core of required courses, plus a large number of elective courses (many of them at an advanced level) which serve the needs of the students in all degree programs. The 37 member faculty is multi-disciplinary, consisting not only of architects, but also of engineers, historians, social scientists, computer scientists and mathematicians. As is appropriate for a graduate school, GSAUP encourages debate about the central issues of architecture and urban planning, and provides a forum for representatives of diverse viewpoints, rather than attempting to neatly package a body of received wisdom.

All our education funds come from the State. We raise outside funds for research and student scholarships. The annual budget is slightly over $2 million. When there are cutbacks, as was the case recently, we tighten our belt as do all the other schools on the campus. But the state funding agencies have not interfered with our structure, curriculum or faculty.

Faculty salaries are set by the system as a whole. Our capacity to recruit faculty we want may, at times, be limited when salary is a prime consideration. But we have done very well in recruitment. We have lost one or two persons because of salary, but overall there is no serious problem in attracting the best faculty.

The current tuition for graduate students is $1,524 yearly for residents, $4,674 for nonresidents. On that score, UCLA has a comparative advantage over other graduate schools. We have developed a substantial scholarship and financial aid program. For example, we have 17 named scholarships and fellowships—ranging from $2,000 to $5,000—and we help support well over half our student body to some degree.

The School is organized as a single independent unit with two programs: Architecture/Urban Design and Urban Planning, each with a Head whose authority is quite similar to that of a department head. Within the broad framework and resources provided by the campus administration, the School functions independently with regard to decisions affecting curriculum, admissions, and other matters touching on education and research. Major changes, such as new degree programs and faculty promotions, require outside approval. Students can take courses in other departments and schools such as the College of Fine Arts, the School of Engineering and Applied Science, and the Graduate School of Management.

Important decisions on curriculum, new faculty, promotions, admissions, and the like are all made by the two faculties. Student representatives serve on many of the decision-making committees, so their influence can be felt. The University of California system is relatively democratic, given the substantial clout of the faculty.

A Versatile Faculty

The Architecture/Urban Design faculty has 19.5 full-time equivalent positions. The ratio of full-time to part-time varies slightly from year to year. Currently, there are 12 full-time ladder faculty members, and two full-time nonladder faculty members; there are 24 people in part-time and visiting positions. We have faculty members ranging in age from their late 20s to their late 60s. Two of the full-time ladder faculty members are women. We have not yet succeeded in achieving adequate representation of women and ethnic minorities on the faculty, and efforts continue in this direction.

The primary criterion in selection of faculty members for the Architecture/Urban Design Program is the quality and importance of their professional and scholarly work. We also look for the necessary teaching skills, of course, and the ability to contribute to the organization and administration of the academic programs. There is a standard tenure system, but we are able to respond to new circumstances and directions, when necessary, by allocating a substantial proportion of our faculty resources to nontenured and visiting positions.

A full-time faculty member is expected to teach five 10-week courses per year. Generally, two courses are taught in two of the academic quarters, and one in the third. A lecture or seminar course normally has two 90 minute sessions per week, while a studio meets two or three afternoons (four hour sessions) per week. Faculty members are expected to be available for individual student consultation and to engage in research and scholarship, but it is impossible to estimate the hours spent in those activities. Over half of our faculty are involved in some form of research on energy, climatology, computer aided design, design theory, or history.

Some full-time faculty members have very active practices, some combine research and scholarship with less active practice, and a few are totally oriented toward research and scholarship. The majority of the part-time and visiting faculty members are practicing professionals.

Urban Innovations Group, the practice arm of the school, provides an avenue through which faculty members and students work together on projects. Of course conflicts sometimes arise between the demands of professional and academic life, and we do our best to resolve these on a case-by-case basis. But our basic position is clear: we strongly encourage practice by faculty members, and expect that practice experience will provide a foundation for teaching.

Academic Program

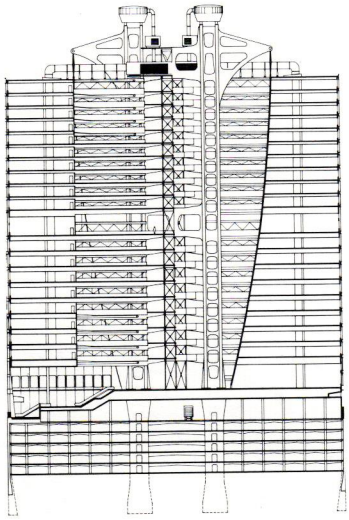
The M.Arch. I first professional degree program accepts applications from those holding a baccalaureate degree or its equivalent, comparable in standards and content to a bachelor's degree from the University of California. It accepts applications for

admission from students with broadly diverse backgrounds. No academic or experiential training in architecture is required of applicants, although some of our students have experience in the field prior to admission. The M.Arch. II second professional degree program accepts applications from those holding five year B.Arch. professional degrees. The M.A. and Ph.D. programs accept applications from those holding at least baccalaureate degrees in fields relevant to their proposed scholarly or research specializations.

Admission to all programs is highly competitive. Admissions committees attempt to evaluate candidates' abilities by considering a range of evidence: portfolios of design work; creative work (literary, scientific, *etc.*); statements of purpose; academic record; and letters of recommendation. Basically they look for evidence of high intellectual ability and sufficient maturity to withstand the rigors of a very intensive graduate program. Due to the very large number of applications each year and the fact that a large percentage of applicants are from outside Los Angeles, the committees do not conduct interviews.

The undergraduate majors of current students are distributed as follows:

	M.Arch. I	M.Arch. II	M.A.
Architecture	22%	100%	52%
Other Design Fields	15%		13%
Fine Arts	22%		9%
Sciences	8%		0%
Humanities	33%		26%



Approximately 35 percent of currently enrolled students are women, and approximately five percent are members of ethnic minority groups.

A handful of students tend to drop out of M.Arch. I during the first quarter of the first year—usually when they discover that architecture is not really what they expected. Beyond that, the dropout rate is negligible, although some students struggle, and take longer than normal to complete their degrees.

Students in the first year of the M.Arch. I first professional degree program take twelve hours of required studio per week, plus three other required courses (structures, history, *etc.*) The distribution of hours is basically the same in the second and third years, but less emphasis is placed on required courses and more on electives as the time goes on. The final quarter of the third year is mostly devoted to a substantial thesis project.

Students have the opportunity to work at Urban Innovations Group, the unique practice arm of GSAUP. UIG takes on real architectural and planning problems ranging in scale from small domestic renovations to an entry in the Bunker Hill competition, and participation in Charles Moore's Beverly Hills Civic Center scheme. Students are employed to work on these projects under the supervision of GSAUP faculty members, so that their educational experience may include not only studio and lecture/seminar components, but also a component of apprenticeship in a real-world, practice context.

Another important special facility of GSAUP is its extensive computer aided design laboratory (located in the design studio) and associated instructional program. Over a decade ago, it was anticipated that CADD would become an important factor in architectural practice during the 1980s, and we set about providing our students with the background necessary to deal effectively with this new development. Many graduates have since become leaders in this explosively growing field. We also now are providing some guidance for mid-career professionals by running public conferences on the topic, and sponsoring a course on computer graphics for designers through UCLA Extension.

Generally we feel that we can best respond to multi-disciplinary opportunities in the practice of architecture by recognizing that we have a diversity of mature, critical, well-educated students, and by placing before them a spectrum of degree program opportunities, a wide range of elective course offerings, and a variety of different (sometimes conflicting) perspectives on important issues. Under these conditions, and with the guidance of faculty advisors, students are able to tailor their educational programs to fit different kinds of anticipated professional roles.

Graduation requirements are designed to assure that all students from GSAUP reach an acceptable level of professional and scholarly competence. Beyond that, as one would expect from a graduate school that accepts students from a wide variety of backgrounds, the best students are characterized by their high degrees of maturity, originality, and leadership quality. They are flexible individuals, not standard "products" trained to fit into pre-defined slots in the profession.

M.Arch. I shares with other three-year graduate programs the inevitable problem that graduates have not had a lot of time to develop high levels of confidence in their entry-level professional skills (by comparison with graduates from five year or four-plus-two programs). But their breadth of background, and their adaptability, more than compensate for this.

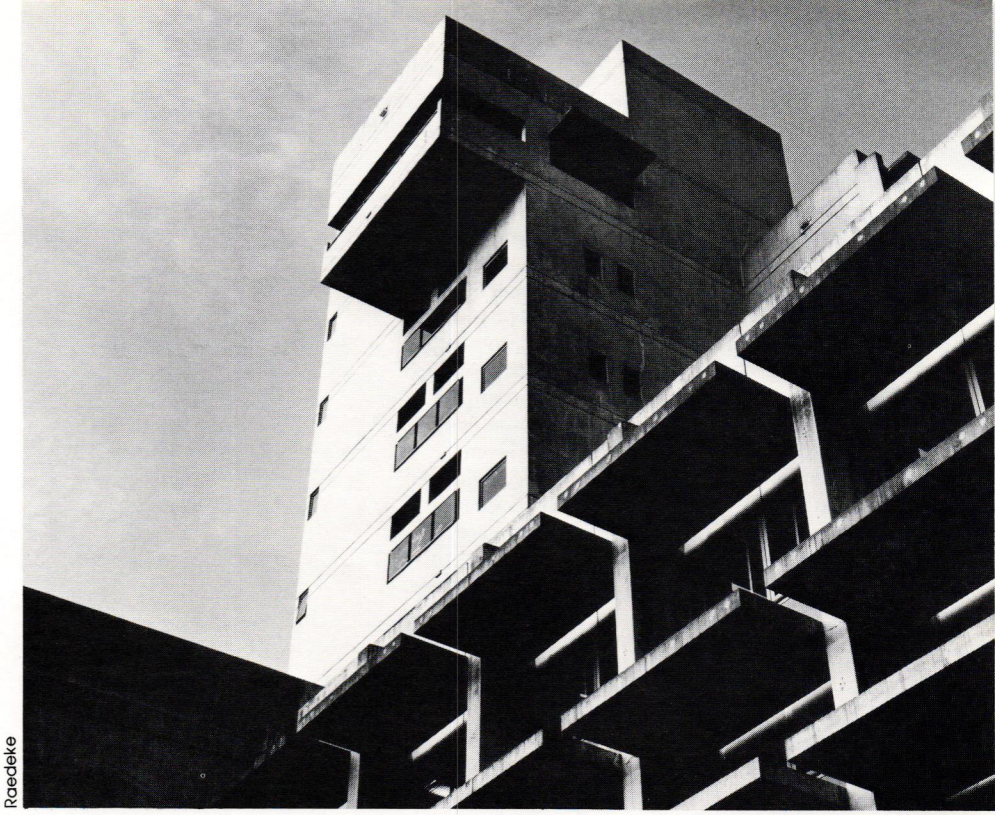
The vast majority of M.Arch. I graduates go on to become licensed and to practice. M.Arch. II graduates normally return to practice roles, and quite a few combine this with teaching in schools of architecture. M.A. graduates typically go into specialized research or consulting. We anticipate that most Ph.D.s will take up academic careers.

Our graduates can expect to see enormous changes in the architecture profession during their professional lives of forty or more years, and we believe that graduate programs should equip them to deal with these changes, and to take leadership roles in response to the pressures acting on the profession. The second major factor affecting the future of architectural education is that funding for universities generally is declining, and many programs are, as a result, either contracting or being eliminated entirely. In response, it seems most appropriate to maintain the framework of a small, agile, innovative school at the graduate level with an orientation toward intellectual diversity, debate and criticism, and the production of relatively small numbers of high-quality graduates.

Harvey S. Perloff has been Dean of the UCLA Graduate School of Architecture and Urban Planning since 1968. A scholar, practitioner and educator, he is the author of numerous books, and has been involved in major planning and development projects in the U.S. and overseas. Professor William J. Mitchell joined the Architecture/Urban Design faculty in 1970, and currently is Head of the Architecture/Urban Design Program. He also is principal of the Computer Aided Design Group in Santa Monica. His research interests lie in the fields of formalized design theory and computer aided architectural design.

Department of Architecture University of California, Berkeley

by Jeffrey M. Chusid


Raedeke

Wurster Hall

Informal architectural education began at the University of California in 1896, led by Bernard Maybeck who was teaching drawing in the Engineering Department. Maybeck helped to organize the Hearst International Competition of 1900 for the Berkeley campus. The competition reflected the importance placed by the university, so remote from traditional centers of 19th century learning, on becoming an international institution. One of the competition participants, John Galen Howard, was asked to become Supervising Architect for the campus.

In 1903 professional instruction in architecture began, with Howard in charge. The four year undergraduate program was expanded to five years in 1953, leading to the Bachelor of Architecture degree. A one year graduate program was started in 1958, leading to the Master of Architecture degree. In the mid-'70s, the Architecture program completed a transition from the five year program to a four plus two (Bachelor of Arts plus Master of Architecture).

The Department of Architecture joined with the Departments of City and Regional Planning and of Landscape Architecture to form the College of Environmental Design in 1959. Four years later, these three units, plus the Department of Art's sculpture studios, moved into Wurster Hall. This College was the creation of William and Catherine Wurster. As Dean Wurster wrote at the time:

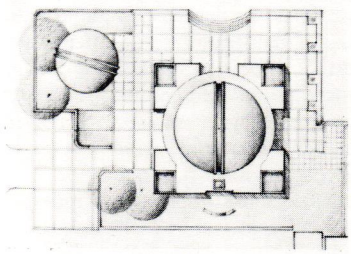
> "Architecture is the science and art of building, closely related to technology as well as to social and aesthetic disciplines. It provides the tremendous variety of structures required by modern man, which must simultaneously satisfy functional and economic requirements, along with less tangible social and aesthetic values. It is the third dimension, the basic unit of the urban physical environment, sometimes all too solid and permanent in a rapidly changing world. As the scale of building projects increases, in terms of residential tracts, redevelopment schemes, civic groups, and the like, the design responsibilities of architects, landscape architects, and city planners need more and more careful coordination, and training for teamwork is required. Thus at the highest level we find these disciplines converging in an area of growing concern: urban design. All these professions are particularly important today in California, whose urban population doubles every few decades with a concomitant need for city and regional planning, for houses and every other kind of structure, and for man-made gardens and parks to replace the natural areas that have vanished. Since the three professions are interlinked in so many ways, it is possible and appropriate to bring them together into a common college. As in the past the primary responsibility for formulating and coordinating departmental programs is directly in the hands of the departments themselves."

With the move into the new College, the Department of Architecture grew to become one of the largest in the United States. Naturally, it has changed over time, but several hallmarks still serve to make Berkeley distinct. First, there is a respect, and even enthusiasm, for diverse approaches to architectural education, for the learning possible when no position governs. Second, the size and caliber of the faculty (10 are FAIA) helps to ensure that internationally recognized programs in areas as wide ranging as baroque history, Third World development and design methods are offered as regular parts of the curriculum. (There are 39 full-time and 75 part-time faculty. Eight women and four minority individuals are among the full-time teachers.) Third, the belief that architecture has significant social function is still a major concern of our curriculum.

Next fall, the University will convert back from the quarter to the semester system. This will have a significant effect on the department. "Though many of the impacts are yet to be tested, one positive effect will be the move to two 15-week design studios from three 10-week studios," says Sanford Hirshen, FAIA, chair of the Department of Architecture. "We expect that this change will produce more of a 'studio culture' with students moving less around the building. And students will have the sorely needed opportunity to study their building designs in more depth than they currently can in the 10 week periods."

But the "smorgasbord" style curriculum, long a treasured aspect of the education at Berkeley, is being preserved by the introduction of modular course offerings of five, 10 and 15 week duration. This will allow two or three regularly organized "mini-courses" to accompany studios focusing on specific concerns such as energy or site planning.

Another important concern for the future of the department, unfortunately foremost in our attention at present, is the impact of budget cuts and the apparent lack of support from the highest levels of



Berkeley Church. Designer: Suzanne Greischel, graduate program.

the state government. (State funding is $2,600,000 for the current fiscal year.) The number of courses offered, and the number of visiting lecturers hired, is determined after receipt of the annual budget from the University. This year has seen dramatic student fee hikes and funding cuts. Current tuition for three quarters is $965 for residents, and $3,845 for nonresidents—graduate tuition is higher.

In the last several years, a Department of Instruction in Environmental Design has come into being—the culmination of a long effort to establish a unified background in common issues for undergraduates in Architecture, Visual Studies, and Landscape Architecture. Under the direction of Associate Dean Roger Montgomery, this department has coordinated the lower division courses offered by the College, and worked extensively with junior colleges around the state which provide a substantial portion of the students enrolled in the school. After taking courses in drawing, basic design, man and environment issues, history, and theory, students are admitted to the Department of Architecture upon application.

There are 923 students in the programs offered by the Department of Architecture: 694 undergraduates and 229 graduates. Of these, 338 are women and 321 are minority students. The undergraduate degree is the Bachelor of Arts with a major in Architecture. The graduate degrees are the Master of Architecture as a first professional degree (either a two or three year program), the Master of Architecture as a second professional degree (one year), and the Ph.D. in Architecture.

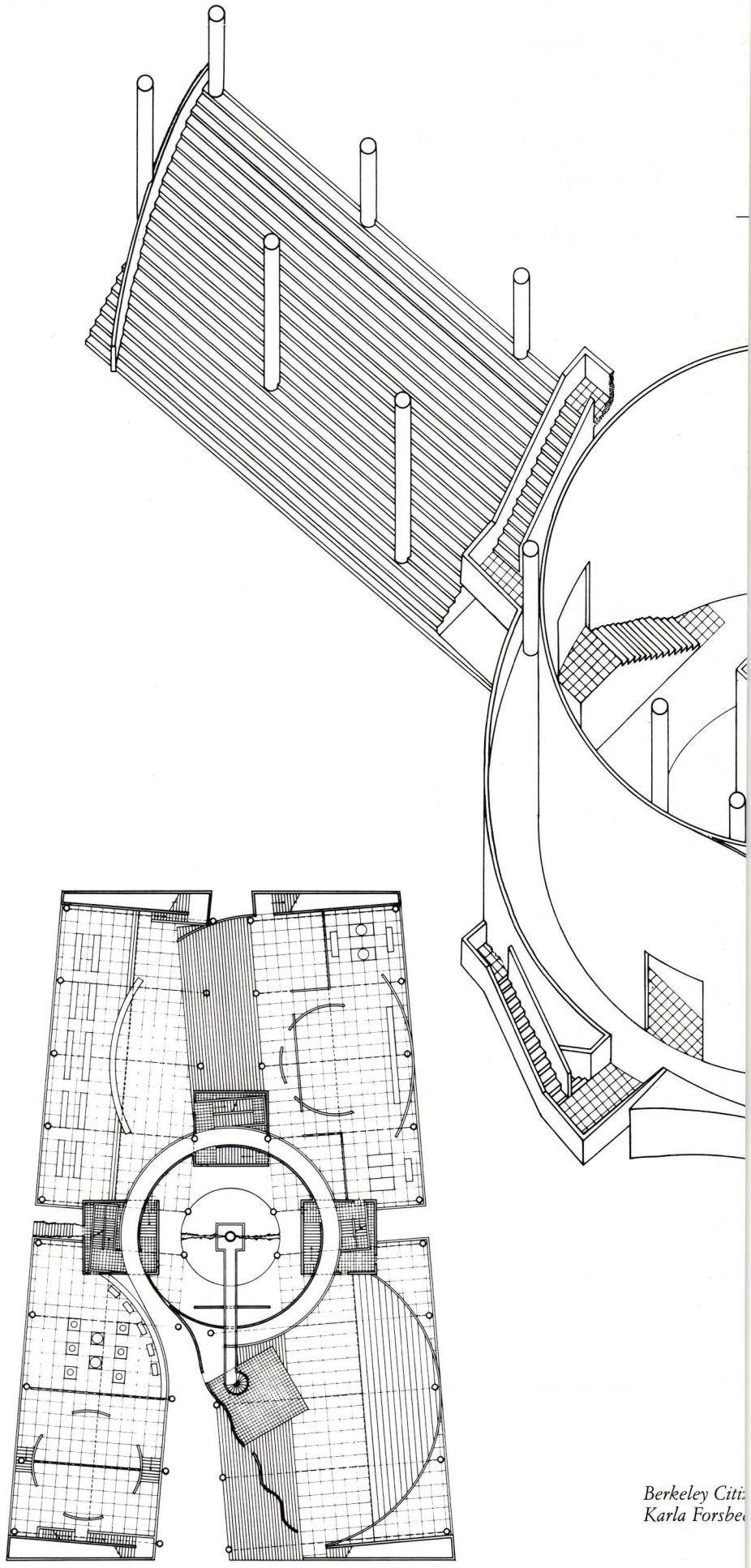
The overall aim of the undergraduate program is to establish a strong foundation for a diversity of careers and to provide for mobility and flexibility to suit changing individual opportunities.

Professional education in architecture is the primary aim of the graduate program. The principal graduate degree, Master of Architecture, is the basic professional degree accredited nationally for licensing or registration to practice architecture. Since the establishment in 1969 of the degree Doctor of Philosophy in Architecture, preparation for research and teaching in architecture and environmental design has become an important secondary purpose of the graduate program.

Graduate students work independently with a faculty adviser to make their own study plan. The graduate program and its courses are structured around five areas of study. These study areas are: the social basis for design, community development and design, design theories and methods and professional practice, applied building science (energy management, structures and construction), and the history of architecture.

As part of a renewed interest in community development, the College of Environmental Design has incorporated into the architecture and landscape architecture curricula a Community Design Program. The Program reflects the principle that all communities should have access to the benefits and services of good design and planning. "The department remains deeply committed to its role in the community through the design curriculum," Hirshen says. "By means of an active, ongoing program of Community Design Centers we continue to train students in participatory design and to offer them direct participation in serving the environmental needs of the community."

In other developments, there has been a major growth in the Department's Building Sciences Lab-



Berkeley Citi
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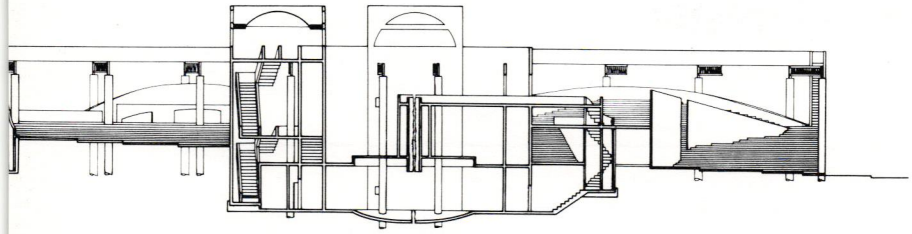
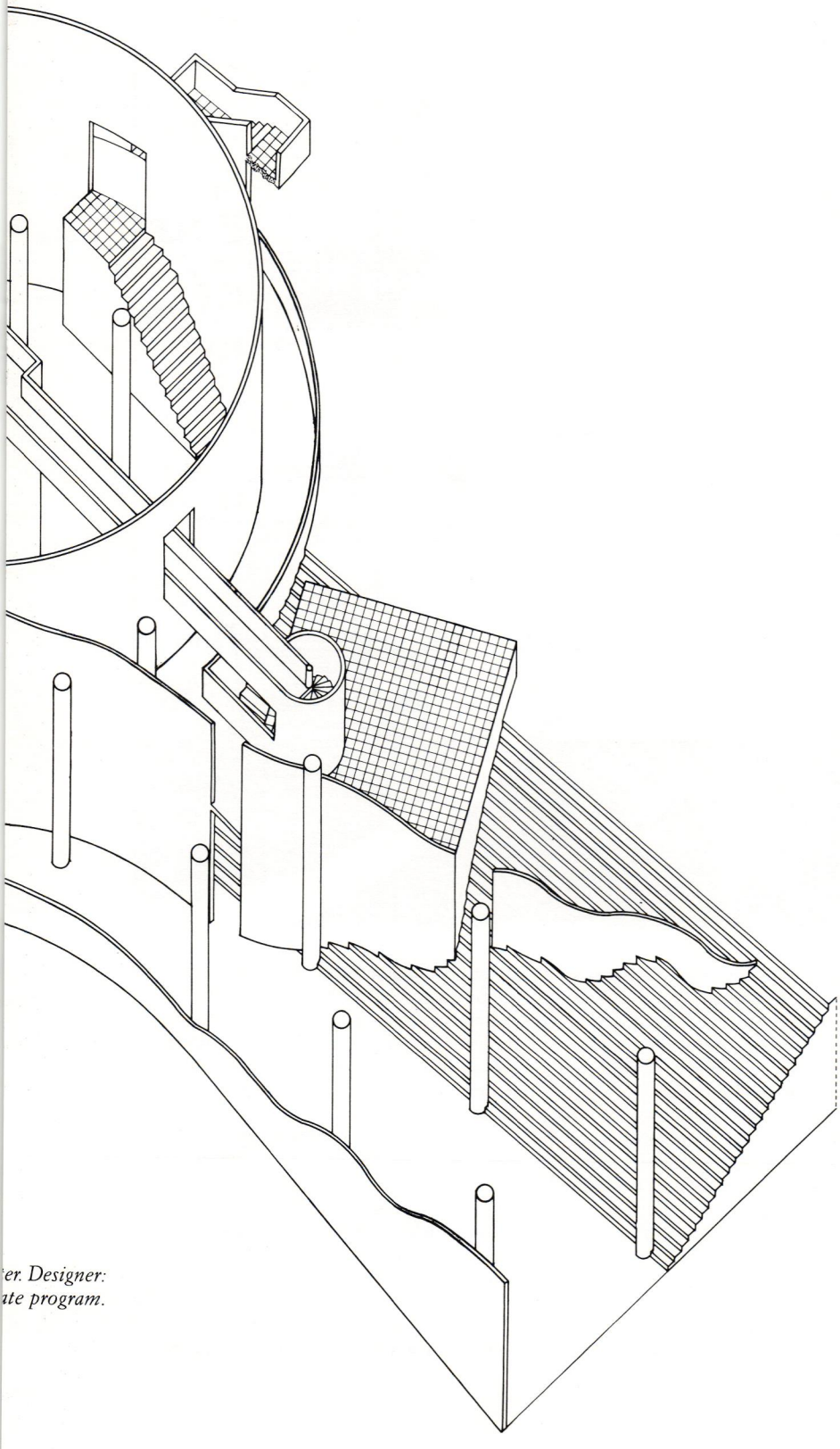




er. Designer:
ate program.

oratories. An Artificial Sky, one of only two in the United States, provides a range of light distributions of clear or overcast skies for the testing of daylighting in architectural models. The Boundary Layer Wind Tunnel analyzes natural ventilation, structural wind pressures, climatic effects on comfort, and air pollution dispersal.

The Thermal Labs perform a wide range of testing and analysis of building components and materials utilizing advanced scientific instruments. These instruments can be used collectively to determine heat transfer, infiltration, and shading potential of building components. Three solar testing facilities are used for determining the effects of solar heat gain under varying architectural conditions.

In the Environmental Simulation Laboratory, issues of urban design and planning are being explored on a larger scale. The simulator is a motion picture camera with a "snorkel" lens and gondola suspended from an overhead crane that passes through and over models to create a "sidewalk" level film of existing and proposed urban scenarios. This laboratory is a versatile urban design tool, used in developing design and planning guidelines for San Francisco, Berkeley and Marin County.

Sanford Hirshen, FAIA became chair of the Architecture Department in January, 1982. "Given the current economic conditions in the country, with the attendant negative impact on the profession and the ongoing erosion of the 'steady-state' condition of the University, my aims and goals are centered on sustaining the acknowledged quality and character of our program in a basically unreceptive climate," Hirshen says.

"One objective is to clarify the distinction between broad undergraduate environmental design education and professional architectural education at the graduate level. The first specific accomplishment in this regard is the creation of an architectural history major at the undergraduate level with the anticipation that other majors will emerge to offer the student a wider variety of future career choices. We also are continuing to accommodate the student who seeks to enter the profession after completing his or her undergraduate education.

"Computer literacy for all of our students is another clear objective. In this area we are feeling the lack of resources both in terms of personnel and hardware, although what is taught is done very well.

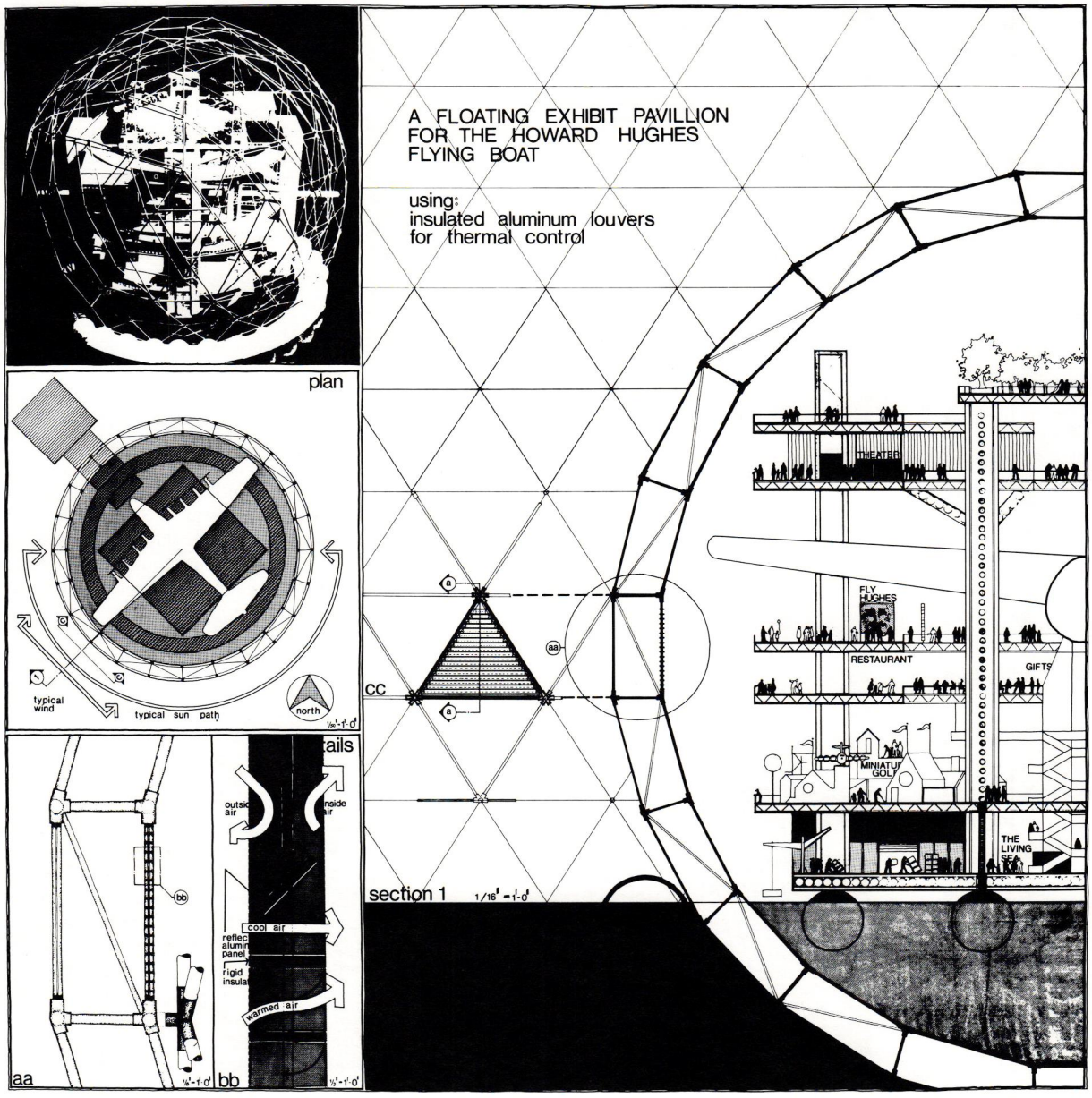
"One focus of the department has been to develop a solid building science group. We have created the resources to give our students the capacity to design for energy efficiency and we will continue to emphasize this aspect of their training.

"We actively are moving toward the creation of a modest program in conservation and preservation of buildings. This year we hope to hire an 'Americanist' in history. The College is preparing to engage a cultural geographer, and we hope to gain permission to add a design teacher with training and a deep interest in conservation, preservation and restoration. These are some of the possibilities being fashioned out of the realistic options open to us. We feel they will keep us in the forefront of our field."

Jeffrey M. Chusid received his B.A. from Berkeley in 1978, and his M.Arch. from Berkeley in 1982. Currently an assistant to the Dean and a member of the Campus Planning Study Group, he is a former editor of the Journal of Architectural Education, *published by the ACSA in Washington, D.C.*

School of Architecture and Environmental Design California Polytechnic State University, San Luis Obispo

by George Hasslein, FAIA



Certificate of Excellence, 1981 Reynolds Aluminum Competition. Designer: Peggy Minger. Instructor: Joseph Amaizio, AIA.

The School of Architecture and Environmental Design at Cal Poly, San Luis Obispo is the school that never should have been. It was not asked for, and flourished in the most unlikely location and under the most unfavorable conditions. A 1969 statewide study of environmental design education concluded that a school in San Luis Obispo would be an impossibility. Yet for a long number of years, it has been the largest school of its kind in the United States and, if the number of applications is considered the criterion, it is the most popular school in the U.S.

The present School of Architecture and Environmental Design had its beginning after World War II as a Department of Architectural Engineering in the Division of Engineering at California Polytechnic State College (Cal Poly). At that time the College's curriculum was primarily agricultural, with strictly vocational engineering. But it became besieged by applicants under the GI Bill of Rights who were required to wait as much as four years for an opening in the two available architectural programs in California. In response to demand, architectural drawing courses were added to the vocational architectural engineering program, along with some design courses.

The small faculty of the early '50s was an assortment of depression-bred GIs, mostly from USC, steeped in the high-mindedness of service to people which characterized the Roosevelt era. Pre-war architectural education was serenely classic-based until toward the end of the depression when the philosophies of the International Style and of Frank Lloyd Wright began to cause educational ferment. Perhaps even more important was a new architectural reality introduced by the recovery programs such as

the F.H.A., which gave rise to the first buildings since "the Crash." The new dimension of technology was entering the educational scene.

The "student based" program at San Luis Obispo had traits inescapably established in its DNA: a work and service ethic; a frontier that was "the profession"; and a combining on the same teaching ground all of the professions which created and constructed the physical environment.

The program spontaneously followed the natural contours of the profession. The California *Education Code* only permitted a four year program in architectural engineering at Cal Poly, because professional programs such as law, medicine, dentistry and architecture were reserved for the University of California. Architecture was "bootlegged" as an option in the architectural engineering program, and graduates from the four year architectural option had to compete in the profession with the five year graduates of other schools. But by the early '60s, the Department of Architectural Engineering had almost 800 students, mostly architecturally based. The State *Education Code* was changed to permit a five year professional program in architecture in the State Colleges simply because a popular program at Cal Poly did indeed exist.

The School of Architecture and Environmental Design became an independent school within the university in 1968, and subsequently City and Regional Planning, Landscape Architecture and Construction were added. The unfolding of the DNA was complete: those professions which create the environment were now together in a nondepartmentalized, interacting unit. The university reorganized the school into traditional departments in 1979 and presently is exploring shifting some of the programs to other academic areas.

The common educational objectives and exposures have predictable results in later professional life. Graduates are adept at relating to other design professionals. The unique architectural engineering program specializing in structures creates structural engineers who can team with architects. Presently one out of every 10 structural engineers licensed in California comes from this School's program in architectural engineering. The same qualities hold true for landscape architecture, city planning, and construction.

Today's School is a vigorous organism of about 100 full- and part-time faculty encompassing a wide variety of specialities. The relatively isolated location of the School in San Luis Obispo holds this vital faculty resource together in a way that provides a rich variety of curricular explorations and choices for students impossible in an urban setting. The bootstrap beginnings with integrated disciplines building their own facilities eventually led to experimental contruction that has received considerable national attention. But the real lessons were in teamwork, reality/creativity and interdisciplinary communication.

Necessity is often the mother of innovation. Since the present School of Architecture and Environmental Design was not established as such, nor was it ever sufficiently funded as an environmental design program, it developed strengths that give it its present character. For example:

- In the early '50s, with so little faculty available, interaction with practicing professionals was pursued as a teaching resource. The first consistent and organized involvement of students in professional conventions in the nation occurred. Eventually these efforts resulted in the California Council, The American Institute of Architects subsidizing student attendance at professional activities, even prior to national efforts in this respect.
- A continual stream of professionals was routinely involved in laboratory teaching on a daily or weekly basis, exposing students to the thinking of urban centers as compensation for the semi-rural location.
- Community design centers also were pioneered in the early '50s, since funds were made available by communities for instructional project work (play yards for schools, bridges, plazas) designed and built by students.
- The large School (1,000-plus) was pioneered at Cal Poly. The early basis for this was simply to provide the wide range of facilities and faculty that could not be provided by a conventionally sized, low-funded program.
- Vigorous efforts to cut down on remoteness were made with field trips as required work and with programs abroad. Fourth or fifth year programs were developed to be taken in Copenhagen or Florence.

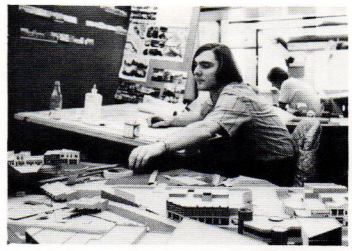
School Organization

The School of Architecture and Environmental Design consists of five departments organized in the conventional fashion. Considerable common work occurs during the first two years, permitting and encouraging students to change majors as aptitudes and insight into interests emerges. The following degrees are offered:

- Architecture Department: Bachelor of Architecture degree, 790 students; Master of Architecture, 30 students.
- Architectural Engineering (Structural Engineering): Bachelor of Science degree, 190 students.
- City and Regional Planning: Bachelor of Science in CRP, 100 students; Master of City and Regional Planning, 25 students.
- Construction: Bachelor of Science in Construction, 190 students.
- Landscape Architecture: Bachelor of Science in Landscape Architecture, 190 students.

California students in the upper one-third of their high school graduating class are eligible for California State University admission. Since the School of Architecture and Environmental Design turns away from 1200 to 1400 students each fall, special entrance requirements have been established. As a result, entering students are generally in the upper five percent of their graduating class. Being a publicly supported institution, no out-of-state or foreign students are accepted in the undergraduate program because of the program's inability to accommodate all the applying California residents. The primary admission factors presently used are general grade point average, grade point in key courses that relate to the major selected, SAT scores, and some minor special weighting for minorities, women and leadership activities. Despite serious efforts, no methods have been found to predict creative ability.

The number of women students is increasing. Women students account for about 18 percent of the enrollment in Architecture, 50 percent in Landscape Architecture, 30 percent in City and Regional Planning, five percent in Architectural Engineering, and three percent in Construction. The number of Blacks



Design cubicle.

and Mexican-Americans is stable at about five percent, and is not increasing despite encouragement.

Architecture students test higher than any other major on campus in both math and linguistics. Before selectivity was as intense as it is now, one out of every 5½ students graduated. Presently the persistence rate is above 50 percent. The School's spectrum of five disciplines permits changing to another environmental design major with little if any loss of time. For example, about 25 percent of the architectural engineering majors are students who originally elected architecture, but found their ability at mathematics and engineering superior to their interest in architectural design and drawing.

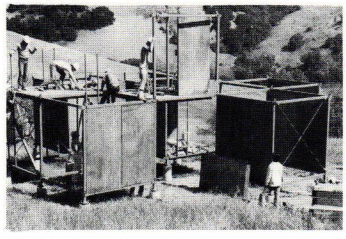
An increasing number of architectural students are electing to get a Master's in Business Administration and even a second degree in Construction, rather than the conventional Master of Architecture degree.

About 80 percent of the graduates go into the architectural profession. In one recent study of candidates passing the architectural licensing exam, 46 percent of those passing from California schools came from Cal Poly, San Luis Obispo. From its beginning, the School has encouraged student interaction with the California Council, The American Institute of Architects (CCAIA), a connection which carries on into professional life. Of the 19 AIA Chapters, eight are headed by Cal Poly grads, with 12 of the 41 CCAIA Directors coming from Cal Poly.

As a component of the California State University System, the School is supported by public funds. No tuition is charged, but fees amount to $480 per year. The School's annual budget is close to $4 million, of which about 60 percent is devoted to salaries.

Facilities

Design laboratories are outstanding. Each architecture student has a cubicle with locker space from the third year through the graduate years. Laboratories are open around the clock and on holidays. Duplicating and printing facilities are available, as are shops, stress laboratory, soils lab, multi-media lab, presentation facility, manufacturer documents library, a 20 acre experimental construction site, galleries, human factors lab, seismic lab, concrete labs, and darkrooms. Computer resources are increasing rapidly. The University maintains a computer productivity lab specializing in computer graphics, which is being adapted to architectural applications.



Modular steel construction device used to demonstrate different stress conditions.

The excellent technical facilities and the School's large, diverse faculty are highly adaptable to interdisciplinary research. Sizable grants already have been awarded to the School for seismic studies. Additional projects have been funded in solar applications ranging from habitations to greenhouses, planning and other technical applications.

Curriculum

The curriculum is rigorous, requiring architectural students to take math and physics at an engineering level. Drawing communication begins in the first year; architectural design commences in the first year and continues as the major time investment until the fifth year. Technical coursework runs parallel to design work and, in certain areas, coordinates with design.

General education and breadth requirements mandated by the California State University System presently constitute 72 quarter units. This results in about one and one-half years' academic work. About half of the work is taken in the student's major.

Curricular format is highly structured in the early years. Choices and options broaden as progress is made toward the fifth year, which consists of a series of year-long options such as Architect Developer, Corporate Architect, Restoration/Rehabilitation, Urban Design and Design. A fifth year option titled "Urban Lab" involves intense community field work in Los Angeles.

Graduate Program

The 1969 California Higher Education Study of Environmental Design Education prescribed the "four and two" format. As a result, the five year Bachelor of Architecture degree was dropped in 1972, and a four year Bachelor of Science in Architecture was substituted with a two year Master's degree. The School chose not to change its professional emphasis, and constricted the four year degree into a more intensive version of the previous degree. The new two year graduate degree was a continuation of the four year program and concentrated on the "theoretical," rather than the professional, subjects mastered in the four year program. Continual difficulty was experienced in finding qualified applicants with the proper academic and professional backgrounds to meet the entrance objectives established for the new Master's program. This, along with concerns for the lack of professional depth of the four year undergraduates, led to the abandonment of the "four and two" and a return to the five year professional degree in 1979.

The present Master of Architecture program accommodates graduates of either four or five year architectural programs. Unlike the severely impacted undergraduate program, the number of applications to the Master's program permits entrance by foreign and out-of-state students. The faculty is not separated into graduate or undergraduate faculty but ranges through the entire School.

Present-day Students

There is always the question, "What are students like now?" Perhaps a better question is, "What is the profession like now?"

Education unavoidably adjusts itself to the times. Ours is an attractive profession that now finds a great number of applicants with high academic ability seeking entrance. These people are at ease with computers, user studies, programming, writing and reporting. It is almost as if nature is ensuring survival by providing professionals who are at home with environmental impact studies, solar, codes, legal matters and all the "front end" work that did not exist in our profession a short time ago. The present student also draws well and adapts to high-tech demands with relative ease.

Yet the essential role of a school is timeless with respect to inculcating humanism and insights into man's condition and helping the searching persons find themselves, whether it be in a career or in existing with another human being. The substance of an education with regard to a school lies in something as simple and as ineffable as a feeling. A school is a spirit—a pride, an elan, an attitude. When one looks back at one's education in later years, that is what remains.

George Hasslein, FAIA is the founding Dean of the School of Architecture and Environmental Design at California Polytechnic State University, San Luis Obispo.

School of Architecture The University of Southern California

by Robert S. Harris, AIA

The University of Southern California is a private university located at the heart of Los Angeles, only minutes away from the central business district. The Department of Architecture was established in 1919, in response to the need felt in southern California for a school affording a thorough professional training in this field. In 1925 the School of Architecture was organized and the four-year course in architecture was increased to five years, leading to the degree of Bachelor of Architecure. The school was organized as a College in 1931, at which time professional curricula in design, painting, and sculpture, leading to the degree of Bachelor of Fine Arts, were established. In 1932 the graduate curriculum in architecture, leading to the degree of Master of Architecture, was approved. The name of the College was changed to the College of Architecture and Fine Arts in 1933.

To meet the increasing need for training in the field of industrial design, a four-year course in this subject was approved in September, 1945. Beginning with the winter term of 1945, the name of the College was changed to the College of Architecture, to include the Department of Architecture and the Department of Industrial Design. By the mid-1950s, the School also offered programs in city planning and in landscape design.

Throughout the period from 1924 until the initiation of the programs at UCLA in 1966 and at Pomona in 1963, the programs in architecture at USC were the only fully accredited professional degree programs available in southern California. Only the programs at Berkeley have existed in the state for a longer period.

At the conclusion of the Second World War, Arthur B. Gallion was named Dean of the College of Architecture. The School's bulletin for 1945–47 boldly addressed "the challenge of the postwar world." Its orientation, like that of the larger society, was toward a future of new needs and requirements and of great promise. The period from 1945 to 1960 was the heroic period of modern architecture in California, and the USC School of Architecture was its southern California center.

The postwar period ended with substantial social changes in the 1950s–60s. The Korean and Vietnam conflicts; challenges of redress nationally in regards to race and poverty; nearly global access to nuclear technology and armament; and new economic cycles, as well as redeveloped economic power both in Europe and in Japan—all had an influence on our outlook about the present and the future. When Sam Hurst became Dean of the School of Architecture in 1961, the second major period of the postwar School began.

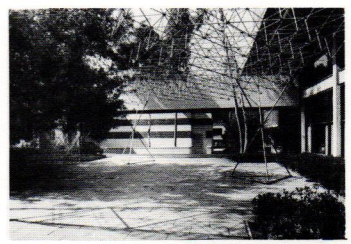
As in the society, the School's interests were redirected toward a more comprehensive understanding of what seemed a more complex world. Dean Hurst and others throughout the profession saw the opportunity for architects to exercise wise leadership only if they had a whole enough education. At Berkeley the College of Environmental Design was organized by Dean Wurster, and nationally the Princeton Report, strongly supported by The American Institute of Architects, presented a new form of architectural education. This new proposal, known as 2 + 2 + 2 or 4 + 2 programs, designed to replace the conventional five year degree programs, emphasized a foundation of general university studies in the humanities and sciences prior to engaging in architectural studies intensively in the third or fourth year of college. Nearly half the schools of architecture in the United States, including USC, adopted this new approach.

Mary Ormerod Harris Hall

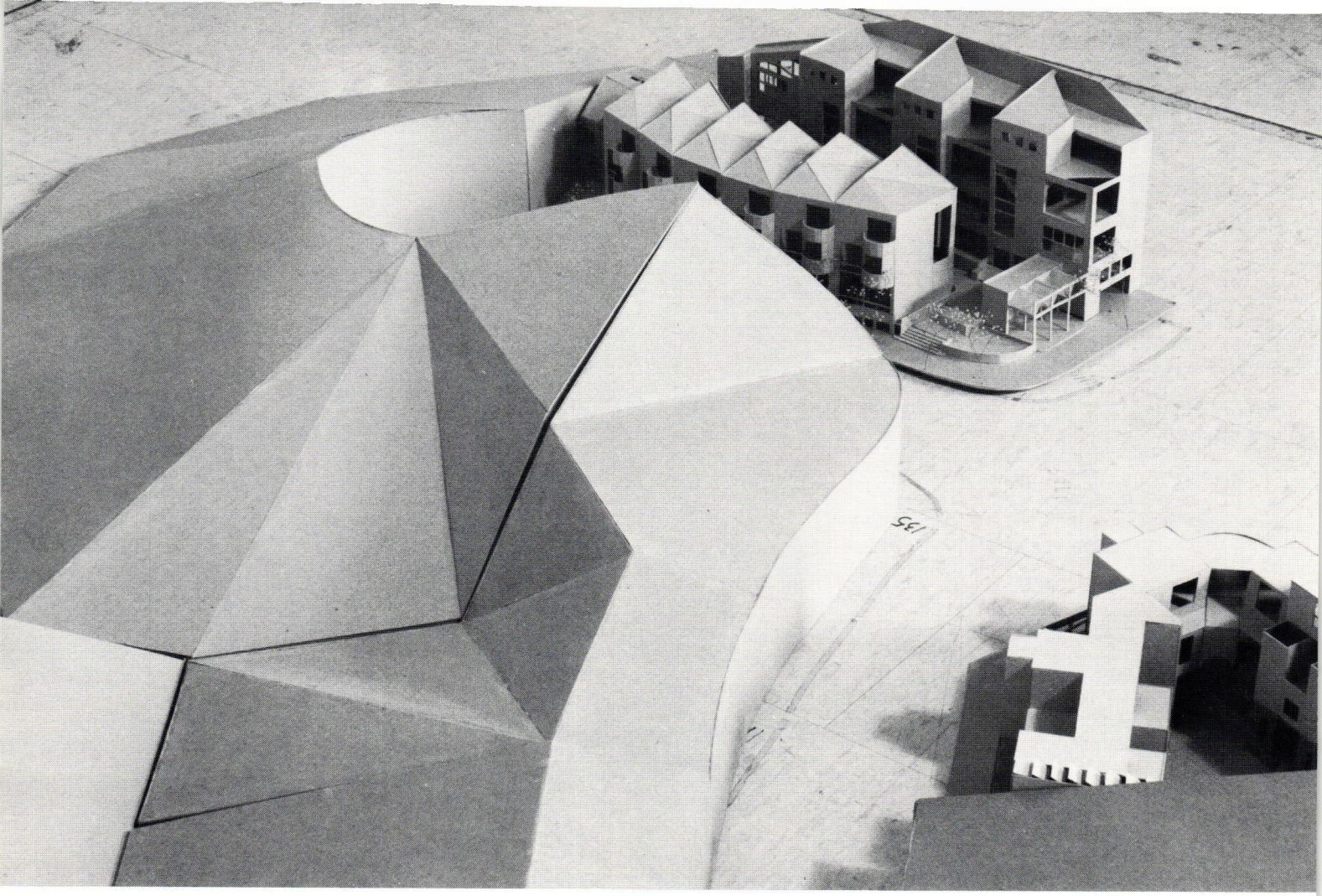
The second postwar period of the School's development could no longer be so clearly associated, as was the first, with a single clear set of ideas and images about modern architecture. It was more a period of inquiry and exploration for the country, for the School, and for the profession at large. By the early 1970s some of the national experiments were recognized as having unforeseen consequences. The large proportion of students receiving their four year degrees were going directly into the offices and into practice rather than completing their professional education. Without those final two years, they lacked both the knowledge and the skills that offices had traditionally expected. And others, clearly distracted by the social unrest at home and the war in Vietnam, graduated with ambiguity about the central purposes and discipline of architecture.

In 1973, Ralph Knowles became the Interim Dean of the School, and the current faculty of the School was beginning to assemble. When A. Q. Jones was named Dean, the transformation to a more practice-oriented faculty was accompanied by a return to a five year degree program.

This third postwar period, perhaps still in effect, is one of balancing the traditional interests of practice and the rapidly changing contexts in which architects are expected to perform. The School has managed to work at this balance despite numerous changes in



Ray & Nadine Watt Hall



Testing the proposition that a zoning policy guaranteeing sunshine to all properties will enhance and not constrain design opportunities was the course objective of the Solar Design in Housing Studio for third and fourth year students held in the Spring semester, 1983. Three special conditions were specified: an emphasis on passive strategies that use location and form of building, not mechanical devices, as the principal adaptation to climate; an emphasis on the impact of a variable surrounding such as might result from hillsides or curving streets; and an emphasis on the way a larger street landscape is made in a project-by-project way. Instructor: Professor Ralph Knowles. Consultant on wind effects: Professor Pierre Koenig, FAIA.

institutional structure and in administrative leadership. Panos Koulermos followed A. Q. Jones as Interim Dean, as did Emmet Wemple for a short time. In the Fall of 1981 I was named Dean, following nearly a decade of transition.

As a fourth period begins, it is characterized by an interest in urban architecture. The first heroic period did, of course, include urban interests, but in a smaller city and in relation to projects and practices of modest scale. The current Los Angeles condition is vast in scale and diversity, and its contemporary and future growth may be anticipated as occurring within the already built landscape rather than at the periphery as before. The School sees its challenges to provide leadership and education in the further maturing of urban landscapes, through projects of every scale, with attention to the continuity of rooms and structures, indoors and out, that support urban experience.

Cycles of Study

The School of Architecture's principal program includes nearly 400 students in a five year curriculum leading to the Bachelor of Architecture degree. This curriculum includes two cycles of studies. The first, encompassing the student's initial two and one-half years, is intensively involved with architectural studies, although it also includes the University's breadth requirements. There are several important premises for this early immersion. First, a language must be learned and skills developed—tasks which already have been put off too long in the student's education. These skills include integrative work and the development of judgment, and exploring the qualities that are subtle enough to not be entirely accessible to theory and verbalization. Also the architecture projects inherently include all those subjects human beings might want to explore: science, technology, economics, sociology, poetry, history—culture. Thus, the curriculum introduces students to architecture as early as possible, both to help them add this new method of inquiry to their lives, and also to allow them to begin to develop the skills they will need. Architecture in such a curriculum is presented as a fundamental discipline, to be learned along with others to be found in the sciences and humanities.

The second cycle is one of exploration and choice. With a foundation of introductory courses in architecture and in general university studies, students in the second cycle are presented with an array of electives. The five year program concludes with a final year that includes comprehensive studies of professional practice and a thesis project. The first students to experience this program completely are graduating in 1983 and in 1984. If the program achieves its objectives, these students will have the broad interests associated with a university education and the enthusiasm, knowledge, and skill associated with architecture.

The School has recently revised its graduate program in architecture intended primarily for students who already possess not only a first professional degree, but also some professional experience. The program requires three semesters and leads to the Master of Architecture degree. The framework for this program is announced by its title, "Architecture

in the Urban Landscape." Studies will be pursued through both design and research efforts that, however specialized, are expected to have significance for architecture in urban settings. The term "urban landscape" signifies an interest in the continuities and characteristics of the natural and built contexts in which architecture occurs. The number of students is small, only about 10 new admissions each year. The intensity of the work is high, as is the faculty's dedication to support serious and useful graduate study.

With the Department of Civil Engineering, the School offers a program in building science. Majors in this program complete the studies required for an engineering degree, and three years of studio courses and other studies in the School of Architecture. These undergraduates develop basic engineering knowledge as well as an understanding of the basic systems of architecture and their integration. The School is preparing a proposal for introduction of a graduate program in building science in the Fall of 1984. The focus will be building in response to natural forces.

Early in the history of the School, studies were offered in landscape architecture. Now the School is studying the feasibility of initiating a degree program in landscape architecture. Preliminary findings will be reported by December, 1983. Whatever programs or courses might result are expected to have an urban emphasis.

Private, Urban Contexts

The organizational structure of the School reflects both its private university and its urban university contexts. As a private university, the governing structure is hierarchical and simple. For academic matters, there is a simple chain of approvals from the faculty and Dean to the Vice President and, if necessary, to the President and the Trustees.

Meanwhile, the faculty and Dean also are interested in the advice and support of the profession. Such support affects the fund-raising essential to a private university, the availability of recommendations to potential students, and the willingness of architects to participate in the teaching program. In this structure, the Dean must be a connecting link serving the interests of students, faculty, the profession at large, and the University administration.

The urban context affects faculty composition. Throughout the postwar period, the School has been able to rely upon experienced and often distinguished practitioners to teach on a part-time basis. The presence of such an extensive professional community as exists in the Los Angeles region is a major resource for the School. The faculty includes almost equal numbers of full-time core faculty and part-time visiting faculty. The total number of faculty members averages 40. A large number of consulting faculty also participate in classes and studios and in reviews. This composition, plus a good balance between new and more experienced faculty, leaves the School without any concern for either being "over-tenured" or inflexible. Of course, rigorous standards are held for granting tenure and promotion.

The School has adopted a policy of "steady-state" in regard to its size. Its current enrollment of nearly 400 students in all programs justifies an ample and diversified faculty, and does slightly crowd the facilities available. As new graduate programs are added, a limited number of students will be admitted, and they may simply create a change in the overall mix of students rather than actual growth. This steady-state policy has additional major benefits. First, the School community remains small enough to allow substantial contact between faculty and students and thus supports informal teaching and learning. And second, any funds available for facilities can be used for improvements and for the addition of important new laboratories and classrooms, rather than for mere expansion.

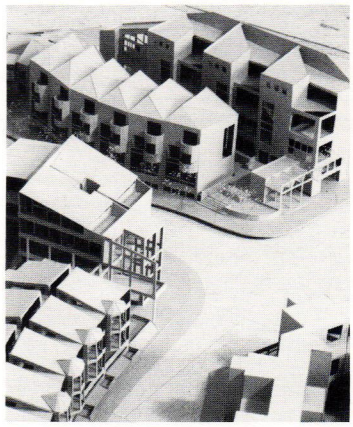
The number and quality of students applying for admission in architecture at USC allow for confidence about the quality of each freshman class. From over 400 applications, less than 100 students begin class in the fall semester. These students rank second among all students at USC in their Scholastic Aptitude Test scores for mathematics, and they are slightly above the average in verbal abilities. They have the third highest scores among all USC majors in grade point average from high school.

More than a third of the students are women, and this percentage increases each year. Nearly 20 percent of the students are international, primarily from the Far East and from the Middle East areas. More than 60 percent receive financial aid. Although the annual costs, including tuition and living expenses, are now at $11,000, the University has moved to assure all qualified students of an aid package. The School of Architecture awards nearly $100,000 in direct scholarship aid each year. More scholarship assistance is needed, of course. The School would especially like to add internships such as those already provided by Welton Becket Associates and by Gale-Kober Associates. These internships not only assist the students significantly toward their annual expenses, but also provide invaluable office experience.

The size of the School and its organization allows a rather positive faculty-student ratio throughout the program. In first year studios the ratio is 1–15, and the total number of faculty is usually six, a group small enough to allow easy coordination and collaboration. In the fifth year studios the ratio is closer to 1–10. In the graduate program, students work with individual faculty members and advisors, and the ratio becomes something like 3–1!

In the midst of a large and major University, and at the heart of one of the world's most interesting, complex, and diverse cities, this small School of Architecture seems ideally situated. Compact enough, its students and faculty work intensively together. Central enough, it has an extraordinary laboratory in which to deal with the major issues of architecture in contemporary urban culture.

For almost half a century, USC was the only school of architecture in southern California. It is now joined by three other accredited programs and many other programs in various stages of initiation and development. Together these schools share many responsibilities. USC, however, by its location and its traditions, must be especially attentive to urban issues and contexts. The challenge for its faculty and students is to have positive images and real understandings of what architects can do to create more habitable and rewarding urban settings. Undoubtedly, if such visions are to be made real, it will be through individual building projects, one by one, year after year, designed by architects whose education equips them to skillfully create that continuity of rooms, indoors and out, that can make the city a welcome and supportive context for our lives.



Robert S. Harris, AIA is Dean of the School of Architecture at The University of Southern California.

Southern California Institute of Architecture

by Raymond Kappe, FAIA

The Southern California Institute of Architecture was an outgrowth of a program started at California State Polytechnic University, Pomona. The program had been in existence for three and one-half years prior to the founding of SCI-ARC by seven faculty members and 70 students. A repressive and unsympathetic administration was responsible for the separation.

Since the program no longer was locked into a university system and its requirements, the option for change offered an exciting opportunity. The emphasis now could be placed upon the individual student. Fewer numbers could lead to more personalization. With greater flexibility and more options, self-motivation could be encouraged. A college-without-walls concept became an important part of the program.

In July, 1972, we leased a three-story, 20,000 square foot industrial building in Santa Monica. Faculty-student discussions began that summer, focusing on philosophy and curriculum. From these meetings, the program was developed. The original catalog declared: "The initiation and continuation of any studio will depend upon mutual student-instructor interest. Students will be encouraged to initiate both seminar and studio classes.... At SCI-ARC we will encourage continuous self-study and self-evaluation by students and faculty. Everything is to be tried and evaluated, and it is to be changed for the better on the basis of experiment or experience."

SCI-ARC is an institution in process. During the academic year 1978–79, another series of meetings were held involving both faculty and students. The growth of SCI-ARC from an enrollment of 75 to its present size of 350 students made it necessary to reassess the founding principles and the future of the school. The result of the meeting was a list of goals:

1) To assist students in developing as competent, responsible architects, sensitive to the needs of society.
2) To maximize exposure to the alternative paths available to architects today.
3) To create a strong sense of community among a socially, ethnically, and creatively diverse faculty and student body.
4) To provide a progressive, challenging, flexible, and valuable educational experience not only to the student body, but to the faculty and staff as well.
5) To foster an atmosphere of personal freedom and self-motivation toward the goal of acquiring sound architectural skills.

The first goal reflects the need for SCI-ARC students and faculty to interface the orientation of a professional architecture school with the social consciousness necessary in our changing times. The needs of the community at large are a vital part of the education of any architect, and only through active research and discussion of those needs can the architect become a contributor to social change. The skills that can be acquired at SCI-ARC that are vital to change include those of urban planning, environmental research, community design and other

related areas.

The second goal represents the desire to expose the student to every facet of architectural life. In so doing, he or she will be more prepared to enter the field with the necessary well-rounded background vital to success today. Given the diversity in orientation that exists on the faculty of SCI-ARC, exposing students to as many faculty as possible benefits the student and creates a comprehensive architectural education.

The third goal pertains to the feeling that, in any educational experience, both faculty and student body need to act as one in achieving all that is possible in that experience. Acting as a united group, any large number of people can far exceed with shared knowledge that which is available to one acting alone.

The fourth goal recognizes the fact that any educational experience must be both challenging and exciting for the student and teacher. By encouraging the freedom of expression necessary to maintain a high level of interest, the students can move beyond their limits to become the best possible architects—always learning, always experimenting.

By accomplishing the goals set out above, goal five becomes easier to attain. A well-rounded, socially conscious education enables faculty and students to become vital, creative members of the architecture community. The interaction fostered between student and faculty and between SCI-ARC and the community insures a responsible, creative dialogue.

SCI-ARC is financed solely by tuition, which is $2,115 per semester for the 1983–84 academic year. The projected income of approximately $1,900,000 for the '83–'84 academic year is budgeted proportionately as follows: faculty salaries, 53 percent; staff salaries, 11 percent; facilities lease, 12 percent; library, 0.5 percent; video, camera, slide library, 1.3 percent; shop, 0.1 percent; computer equipment, 1.5 percent; physical plant improvements, 1.2 percent; general operations, 15 percent; loan on Topanga land, 1.4 percent; and miscellaneous and contingencies, 3 percent.

Common Ground

The Southern California Institute of Architecture is a nonprofit corporation. The founding seven faculty members, plus two additional faculty members and two student members representing the graduate and undergraduate programs, constitute the officers and directors of the corporation. This body makes only financial and faculty hiring decisions.

All faculty and students are involved in the decision-making process. When the need arises, all faculty and student representatives convene to determine both policy-oriented and day-to-day operational direction. A series of all-school meetings, scheduled by students or faculty, allows the total student body to discuss, analyze or initiate ideas for the program's content, operation, and direction. This method has assured the continuing common ground for the total community.

Since its inception, SCI-ARC has not had a faculty recruitment program. Due to our location in the Los Angeles area, we receive many applications from faculty members in other areas of the country. A large, local professional community provides us with many candidates for faculty positions. We normally hire young designers with a great deal of potential rather than established stars. There are currently 32 full-time faculty and 30 part-time faculty at SCI-ARC. Ten faculty members are female.

Our architectural program is composed of diverse personalities, all with their unique contributions. We support this diversity since the profession itself is a complex set of contradictions which respond to a multi-faceted, complex and, above all, fragmented society. The continuity achieved within the program is not related to unified attitudes or approaches, but to the understanding of the need for a dialogue on diverse approaches to common problems.

Our fundamental task is to assist each student in developing and maturing the processes that uncover the issues surrounding the architectural realm, and enable him to translate these attitudes into some context. For this to happen in a rational, non-

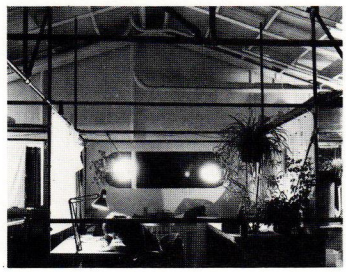
arbitrary way, the architect's education must be oriented toward developing architecture as a humanistic science through the application of firmly-rooted principles of social, political, economic, and biophysical ideology. The methods chosen to achieve these educational objectives focus on the studio as the central synthesizing, problem-solving experience, with seminar, lecture and workshop courses to input directly related information.

SCI-ARC best serves those students whose interests and personal characteristics mesh productively with its distinctive educational program. Drive and determination, a capacity for hard work, and a sense of purpose are more important than one's previous record of attainment. Any high school graduate may be considered. A student without a high school diploma is welcome to an interview and may enter the program if considered qualified.

SCI-ARC offers a four year Bachelor of Arts in Architecture, a five year Bachelor of Architecture degree, a two year Master of Architecture (for students with a Bachelor of Arts), a one year Master of Architecture (for students with a Bachelor of Architecture), and a three and one-half year Master of Architecture (for students with degrees in other fields).

Students entering SCI-ARC directly from high school, or transferring from other colleges and universities, must take courses covering the following general education material or receive credit for equivalents: psychology, sociology, anthropology, political science, philosophy, and economics. The content of these courses offered at SCI-ARC is directly related to architecture and planning, but the broader aspects of each science also are introduced. SCI-ARC is instituting a "Language Skills" course required for students showing a deficiency in writing ability.

Any person holding a Bachelor or more advanced degree may apply for admission into Graduate Program 1. Applicants with degrees in architecture are evaluated on the basis of portfolio as well as transcripts for admission to Graduate Program 2. Master Architecture 1 students come to SCI-ARC with a variety of backgrounds. Students entering the program in Fall 1982 held degrees in such diversified areas as zoology, sociology, English, art history, and economics.



A basic objective of the undergraduate program is to encourage students to assume increasing responsibility and independence as they progress through the five years. To facilitate this objective the studio program is divided into two segments. The beginning student spends the first two years in a structured, sequential studio program. This "core" program is designed to develop design skills and experience considered fundamental to architecture education.

Beginning in the third year, students select a design studio each semester from a list of studio offerings. This vertical studio program encourages interaction between graduate and undergraduate students. Studios offer a range of problems and viewpoints representing the diversity present within the architectural profession. Students normally are not permitted to spend more than one semester with the same design instructor. All degree candidates are required to take the senior project studio in their final semester.

Graduate Program

The graduate program has been part of SCI-ARC's curriculum since its founding. Graduate Program 1 was formed in 1974 with about 30 students. The program has grown over the last five years to about 80 students. As the program grew, the objectives and interrelationships strengthened. Now the two-tier core graduate program is aligned with that of the undergraduate program.

All candidates for the Master of Architecture degree are expected to acquire and display an acceptable level of competency in a wide range of issues to qualify for the Master's degree. The level of competency is evaulated using the three contextual objectives upon which the Graduate studios are based. The first objective is to give the student a complete overview of all aspects of architecture and urban design by discussing the theoretical, philosophical, historical, and practical issues involved. The second objective is to help the student develop strategies for design. The third objective is to help the student learn to communicate his/her work to others through verbal explanation and graphic presentation techniques.

At SCI-ARC, the traditional system of letter grades and subsequent grade point averages is replaced by the portfolio concept for studio work. The student accumulates detailed evaluations directed at samples of his/her representative work. This concept ensures careful and continued evaluation of work in progress by faculty and, in some cases, by fellow students.

Beyond a Formal Education

The question of educating students to operate in the "real world" will probably go on forever. At SCI-ARC we have attempted to balance the program with professional course material, a once-a-year professional practice studio, and two twice-a-week courses in production drawings. We also have an intern program. But still this will not satisfy professionals who feel that students should be able to enter an office totally prepared to handle a job.

Design continues to be the basis of the curriculum at SCI-ARC. This is the reason students study architecture, and even though only a small proportion ever become designers, the thinking and decision-making processes form a basis for other aspects of the profession. We have found that many of our graduates end up in design departments of architectural firms, and many already have made names for themselves by establishing their own firms.

A tremendous formal stress continues in design education today, with an emphasis on historicism, metaphor, symbols and urban context. But, it seems to me, we will pass through this era and move on to greater concern for ecological and environmental issues, new life styles, affordable housing, energy, resource management, and intelligent use of technology. We are obviously in the computer era, and understanding this tool and its potential has and will become an even more important aspect of architectural education.

Studies for space and ocean habitat discussed since the '60s should be more meaningful now with the advent of the space shuttle. This will involve greater knowledge of human factors and self-contained environments, as well as systems appropriate for space. On earth, developing nations need architects who will be more sympathetic to their special problems. At SCI-ARC we are concerned with these present and future problems.

Raymond Kappe, FAIA is Director of the Southern California Institute of Architecture.

School of Environmental Design, Department of Architecture California State Polytechnic University, Pomona

by Marvin J. Malecha, AIA

Raymond St. Francis

School of Environmental Design. Architect: Carl Maston, FAIA.

An evolution of curricula leading to the formation of the School of Environmental Design began with a landscape option within Ornamental Horticulture. When Landscape Architecture formed an option in Urban Planning in 1967, instructors with architectural credentials began teaching architecture seminars. The program of Environmental Design was declared a school from within the School of Agriculture in 1971. The School of Environmental Design now is comprised of three departments: Architecture, Landscape Architecture, and Urban and Regional Planning.

Each program received departmental status when the school was established. From the very beginning, each program was professionally oriented with emphasis on the opportunity for interdisciplinary study. A program coordinator for Architecture was selected in 1970. Raymond Kappe, FAIA began the task of organizing the program option of Architecture into an academic department.

Unfortunately it quickly became obvious that forming a Department of Architecture within the University was not going to be easy. Professor Kappe experienced an administrative and philosophical clash with the University administration which led him to resign his appointment and form the Southern California Institute of Architecture. California benefitted from the formation of another school, but the Department of Architecture was left to reorganize.

The Architecture program continued on a path of reconstruction through curriculum review and faculty hiring procedures until the Fall of 1980, when a full curriculum revision was implemented. This revision established a five year Bachelor of Architecture, a four year Master of Architecture and a one year Master of Architecture degree.

Each department conducts programs which emphasize the role of the design professional in the environment. While formal contacts between departments are limited, interdisciplinary coursework and programs are encouraged.

Architecture conducts both graduate and undergraduate programs. The Bachelor of Architecture program is a five year professional degree which requires 1,000 hours of office experience under the direction of a registered architect or engineer for graduation. This program is heavily weighted toward the practice of architecture as a design profession.

The one year Master of Architecture continues to undergo transition and development. This program is becoming research-based, with an emphasis upon human factors in design. This development is intended to strengthen the Richard Neutra tradition of "Survival Through Design" in the Department of Architecture.

The four year Master of Architecture is offered to students who hold a previous degree. This degree includes three years of preparatory work before the one year of Master's level work may be attempted. An additional year of preparatory work may be required if the student does not progress satisfactorily.

Clearly the curriculum philosophy of the School leans toward professional practice, emphasizing design, with an increased sensitivity to human factors in design. No single style is demanded; exploration is encouraged. Instructors within each year level are expected to work together to foster a team approach to design. The curriculum in each department is closely monitored to evaluate the success of programs.

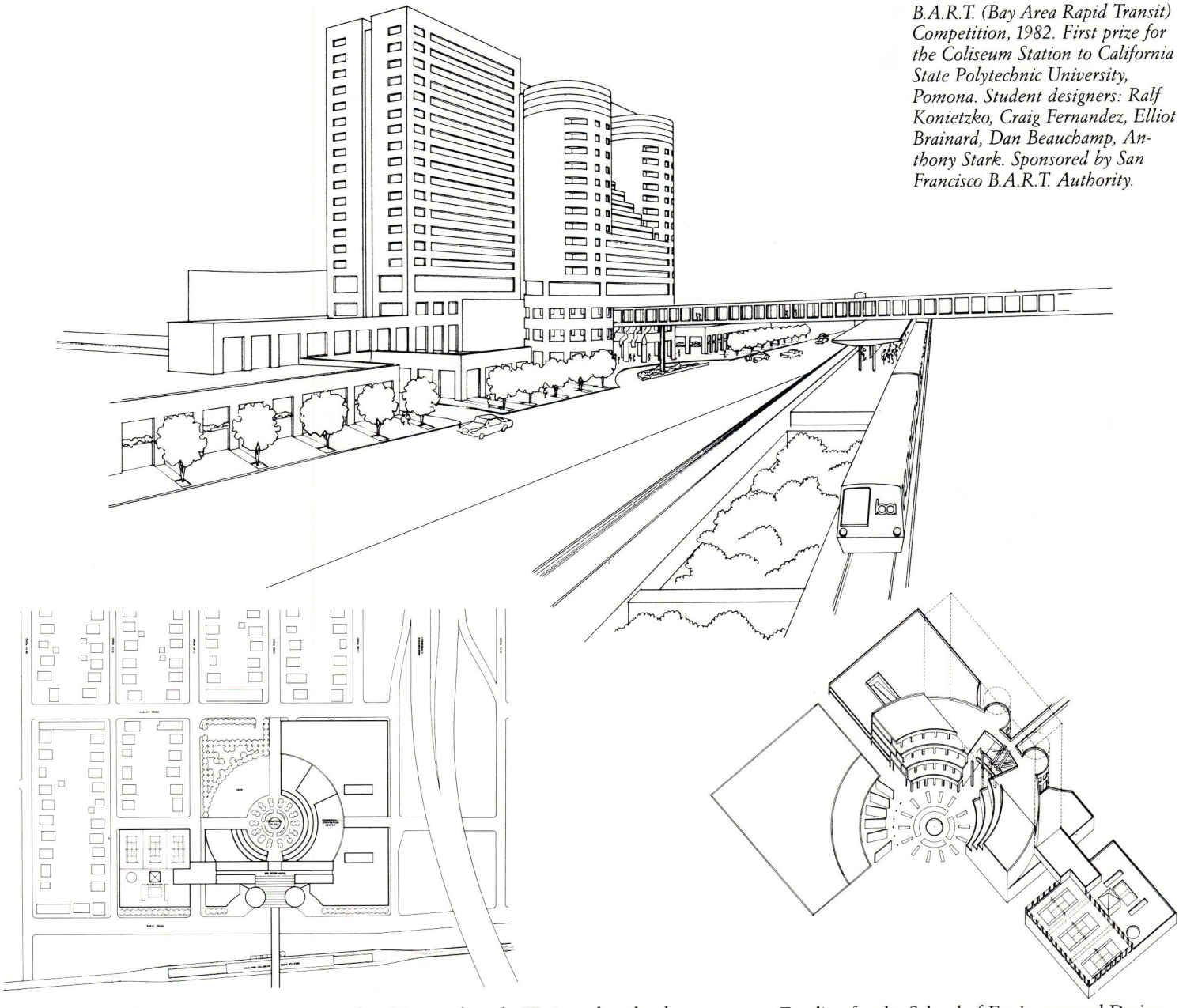
The School believes in the importance of preparing students to work in the profession and encourages the student to develop thorough thinking processes. We recognize that we are not simply preparing technicians. Our goal is to educate people to function as leaders. As members of the academic community, our goal is to prepare people to lead fuller lives. The education of a design professional goes far beyond skills training. The liberal arts and sciences are crucial for the development of an individual who will be a leader in the development of the environment.

As the Dean of the School, my academic goals are more general than specific. First, it is my intention to continue to strengthen the professional education within the school. Our students wish to develop as recognized professionals, and our programs must respond to this as a first priority.

Second, it is my desire to establish more interdisciplinary courses and to specifically establish a program in urban design and additional course work in environmental psychology, programming and needs assessment. Often courses and departments become segmented to the point that people no longer are aware of the activities of other design professions. I want the school to work more closely as a unit and to encourage our students to explore the resources of our university.

Third, I hope to develop more contacts with the public and the professions through the continuing education divison.

Fourth, I have begun the effort to develop a research institute for the students and faculty. This research institute is not planned to accept conven-



B.A.R.T. (Bay Area Rapid Transit) Competition, 1982. First prize for the Coliseum Station to California State Polytechnic University, Pomona. Student designers: Ralf Konietzko, Craig Fernandez, Elliot Brainard, Dan Beauchamp, Anthony Stark. Sponsored by San Francisco B.A.R.T. Authority.

tional architectural work. We intend to develop material which contributes to the body of knowledge within the profession such as environmental psychology, design for the handicapped and planning in Third World countries.

Fifth, I would like to expand the available studio/laboratory space. Attempts have already been made to reduce the size of the School, and particularly, the Architecture Department, so that we can fit within the present facilities. The reduction has brought the size of the School of Environmental design down to 1,000 students. In the past two years the Architecture Department had a planned reduction of 200 students, from 750 to 550. This reduction came at a time when seven applications were received for every applicant accepted. The size of the school and the available resources must continue to be carefully balanced.

The School's primary source of funding is the State of California through the California State University System. These funds are augmented by special grants and research projects, donations of money and materials by individuals or business concerns, and alumni development campaigns.

Funding for the School of Environmental Design is severely limited. Presently we are seeking monies to establish a private school endowment. Resources are presently stretched far too thin due to State funding limitations.

The California State University System is forbidden to charge tuition, but projections indicate that fees totaling about $630 will be charged for the 1983–1984 academic year.

Departmental Structure

Each department has a chairperson appointed by the President of the University, and a graduate coordinator. Department faculty are categorized as tenured, tenure-track, full-time temporary or part-time temporary. Faculty committees are formed to give advice to the department chair regarding the curriculum; reappointment, tenure and promotion; and admissions. The department chairs advise the Dean regarding School issues. In addition, faculty are appointed by the Dean to serve on school-wide committees and also may be called upon by the Faculty Senate to serve on committees.

Students are regularly represented on all university

committees with the exception of reappointment, tenure and promotion, where signed statements and evaluations from students are a required part of the process. The Dean of the School serves on an Academic Deans Council and on university-wide committees on counseling procedures, graduate and undergraduate studies, and fund development. The Dean of the School of Environmental Design also serves on the Campus Planning Committee.

Department curriculum and policy are largely left to each department under the review of the School Dean. Each department maintains a curriculum committee which reviews coursework quarterly, establishes department directions and specifically develops catalog copy and course requirements. The work of the department's curriculum committee is reviewed by the department chair and forwarded to the Dean and the School Curriculum Committee. At this time the curriculum is reviewed to search for ways to implement interdisciplinary efforts and avoid duplication. The Dean forwards all curriculum materials to the Dean of Instruction and the University Curriculum Committee for their review and approval. Major curriculum revision must be approved by the Faculty Senate Graduate or Undergraduate Studies Committee.

The School of Environmental Design is comprised of active professionals and full-time academics. Many visitors come into the school on a short term basis. The Department of Architecture has 10 tenured full-time positions, six tenure-track full-time positions, three full-time temporary positions, and four full-time equivalent part-time positions. This includes 12 part-time instructors with appointments ranging from 0.2 to 0.5 of a full-time position. These instructors are practicing professionals.

Faculty are expected to teach two studios, a studio and a lecture, or three lecture courses per quarter to maintain a full time appointment (12 weighted teaching units). In addition, each faculty member is required to participate actively in department, school and university committee work, and to maintain four clear hours per week of office hours for student counseling. This averages 25–30 hours of on-campus contact hours per week. Also each faculty (full-time) is given a day per week for independent research and study to remain current.

All faculty are required to demonstrate professional credentials for promotion and hiring. Promotion to professor requires architectural registration or a Ph.D. This mix of professional credentials and academic experience is considered crucial to the success of the school. The mix of experience on the faculty of the school is varied, from a Ph.D. in Environmental Psychology and a Ph.D. in Third World Planning to several members who are continuously active in The American Institute of Architects. Faculty members are concerned with solar design, urban design, programming and needs assessment, construction documents, daylighting and graphics.

The Department of Architecture is impacted and receives seven applicants for each available position. For this reason Architecture has implemented a strict set of admission guidelines.

Attrition rates for the entire School of Environmental Design are 40 percent in the freshman year, 30 percent in sophomore, 25 percent in junior, 10 percent in senior, 10 percent in Fifth Year Architecture, 35 percent in Graduate Preparation, and 10 percent of Graduate students.

The students at the School of Environmental Design, as a rule, have work experience. This is encouraged by the Department of Architecture, especially since 1,000 hours of work experience is required before a Bachelor of Architecture will be awarded. Current enrollment in the School is 1,006: 752 men and 254 women. The Department of Architecture has 566 students: 450 men and 116 women. Most students (85 percent) commute to campus; however most of those students live locally.

The strength of the curriculum is its emphasis upon professional skills. This is also its weakness. Ninety percent of our students enter professional practice. Students become overly-focused upon getting out and getting a job. This attitude is not healthy in a learning environment. Experimentation often is replaced by expediency.

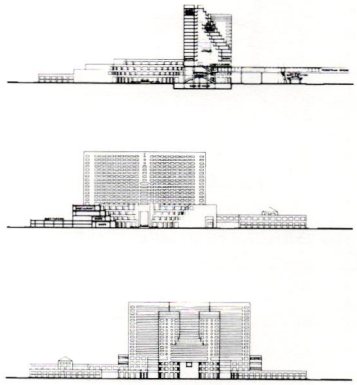
Beyond core curricula, the School of Environmental Design participates in international programs in Copenhagen and Florence through the California State University System International Programs Office. Also, the School has begun a Summer Athens Program through the Extension Division of the University.

The School maintains fully equipped photography and model building laboratories. A resource center has been developed, with a permanent slide collection to aid students and faculty. While this facility has been part of the school since its inception, a new facility was opened in the Fall of 1982. An exhibit gallery was opened in the Winter of 1982. In the same quarter, a computer laboratory with 10 terminals opened. (This does not include CADD capabilities.)

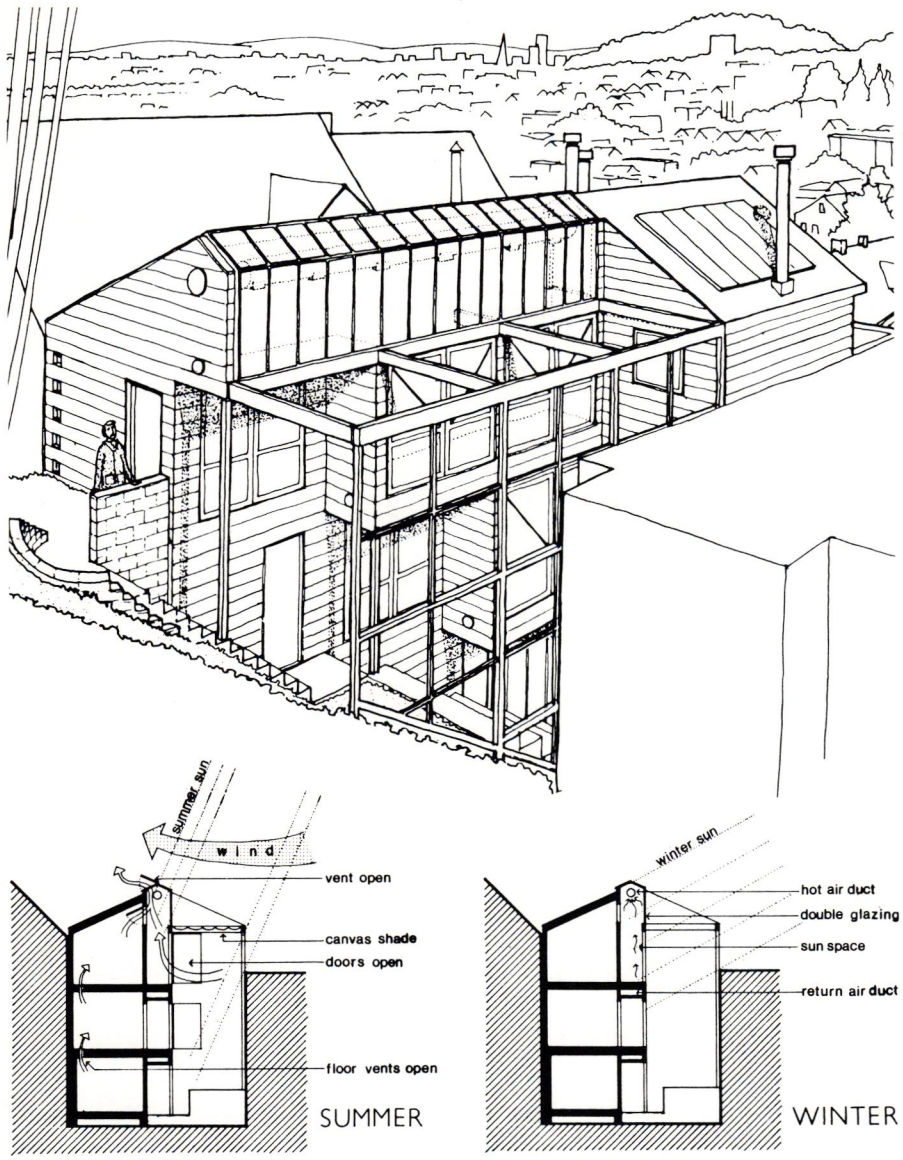
A research institute is being formed and initial planning has just been completed to begin operation in the Fall of 1983. The School is developing a new counseling center, to be implemented in the Fall of 1983, for admissions and follow-up counseling for affirmative action student recruiting.

In each of the departments within the School there is great concern for nurturing a strong professional education. Graduates almost certainly will seek registration or recognition in their respective disciplines. The relationship between training and education is recognized as a delicate balance that must be constantly reassessed. We hope to prepare students to consider continued professional growth into areas other than design and the conventional duties of practicing professionals. The question of preparation for the "real world" comes up frequently. We address the question, but we recognize that no simple answer is sufficient.

The debate of contemporary architecture and environmental design issues influences our school as it does any other. I believe the best answer is to allow a freedom of experimentation and to maximize the guidance time between student and teacher. Debate of all the issues is better than the selective disregard of or selective attention to only a few issues. School and practice are fundamentally different, yet much can be learned from both. Schools are not simply a training ground for office practice.



Marvin J. Malecha, AIA served as Chair of the Architecture Department at California State Polytechnic University at Pomona, and is presently the Dean of the School of Environmental Design. He previously practiced with Hugh Stubbins and Associates, and continues an active consulting practice.



The House on Stanyan Street in San Francisco, designed by architect William Leddy, received first prize in the Single Family Residential Retrofit category of the Second National Passive Solar Design Competition jointly sponsored by the American Solar Energy Society, Progressive Architecture, *and the Passive Solar Industries Council. The existing two story wood frame dwelling of dubious character was enlarged and improved as a speculative venture by an owner/builder. The gable roof form over the existing structure serves as a referential device and an organizational element, according to Leddy. Beneath it, the new extension is located along the north property line, creating an outdoor room to the south which provides an exterior focus for the interior rooms and allows for solar access. In response to the close proximity of an adjacent building to the south and the narrow, steeply-sloping site, the solar aperture is located as high in the building as possible, becoming a glazed erosion of the roof form. At the facade, the roof pulls back from the street to satisfy planning code requirements. As a result, a roof deck is created, which provides mediation between the two adjacent buildings. Because of the prohibitive cost of meeting local seismic design requirements for direct gain mass at the height required on this site, the mass (in the form of a rock bed) is located in the existing garage. Solar heated air is collected from the top of the sun space and mechanically delivered to the rock bed where the heat can be retained to augment an existing gas-fired forced air furnace. The solar space heating system, along with a new solar water heating system and increased insulation, are expected to reduce energy use by roughly 50 percent from that of the existing structure, despite an increase of 85 percent in conditioned space.*

ENERGY

Nonresidential Energ Consensus Building i

by John R. Schade

The issue of energy cuts across all aspects of building design. The interdependence of factors influencing building energy performance is clearly illustrated by the 18 month development process that the California Energy Commission (CEC) and its 40 person Professional Advisory Group used to arrive at reasonable nonresidential building energy standards. The process also emphasized the high level of interdependence needed among building industry professionals to achieve effective, energy efficient buildings.

Although the most obvious building components—envelope, glazing, lighting, HVAC—are well recognized and get the most attention, other components are critical to building design, energy performance and overall building performance. These components include HVAC ventilation rates; user comfort and health requirements; reflectance of interior surfaces; fixture efficiency and maintenance and task lighting levels; interior and exterior mass; carpeting; office size, window height and circulation space; user behavior; automatic lighting and HVAC controls; and environmental quality as it relates to the use, sale and marketability of commercial space.

The standards proposed for adoption in July, 1983 represent a reasoned consensus between the CEC's technical and economic analysis and the practical constraints and perspectives of the construction industry as represented by the Professional Advisory Group. The standards development program also will produce a set of simplified calculation and compliance tools and a Design Compliance Manual.

Two methods were developed for compliance with the proposed standards. Diagram 1 illustrates the prescriptive and performance approaches to compliance.

Annual energy budgets, in Btus per square foot per year, will be established on the basis of the CEC's analyses for each building occupancy category and climate zone, reflecting variations in building size and HVAC equipment characteristics (Chart1). As an alternate to the performance approach, alternative component requirements will specify a range of energy-related requirements for building envelope, lighting and space-conditioning systems (Chart 2).

The process used to develop the bud-

tandards:
he Construction Industry

get and prescriptive packages were directed toward four major objectives: energy savings, cost savings, simplification of regulations and new design/compliance tools.

Energy Savings

The nonresidential standards are expected to reduce building energy use by 40 to 50 percent compared to current Title 24 requirements. Analyses show savings of 85,000 Btus/sq. ft./yr. in the low-rise office category for a typical 10,000 sq. ft. office in Fresno.

Lighting in particular is an important area of opportunity. While maintaining desirable illumination levels, as much as 60 to 70 percent of lighting energy can be saved through the use of cost effective, efficient lighting equipment or, alternately, through the use of daylighting and other lighting controls. The energy benefits of efficient lighting also extend to reduced needs for air-conditioning.

The amount and orientation of glazing also emerge as key factors for the standards. Shading of glass, particularly on west-facing elevations, is of critical importance.

For low-rise office buildings, the CEC analyses demonstrate that economizer cycles—which serve to take advantage of outdoor air when interior and exterior temperatures permit—are cost effective and energy efficient for all areas in the state.

Diagram I
Energy Budgets and Prescriptive Component Packages

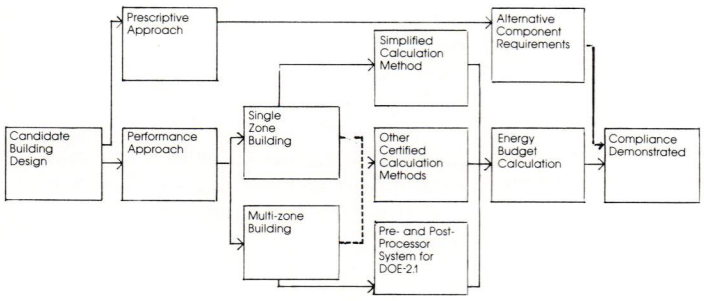


CHART 1
Annual Service System Energy Budgets for Low-Rise Offices
(kBtus per square foot per year)

Climate Zone	Conditioned Floor Area in Square Feet[1] 3,750 or less	3,751 to 5,000	5,001 to 6,750	6,751 to 7,500	7,501 to 10,000	10,001 to 15,000	15,001 to 20,000	greater than 20,000
1	126	115	109	103	101	97	91	88
2	156	142	134	126	124	118	111	107
3	122	113	107	101	100	96	91	88
4	129	119	112	107	105	101	95	92
5	128	117	111	105	103	99	94	91
6	138	127	120	114	112	108	102	99
7	132	121	115	110	108	103	98	95
8	141	129	122	116	114	109	103	100
9	147	135	127	120	118	113	107	103
10	162	147	139	131	129	122	115	111
11	181	163	153	144	141	133	124	119
12	157	143	135	127	125	119	112	107
13	170	154	145	136	134	127	119	114
14	186	168	158	148	145	138	129	124
15	214	193	180	169	165	157	146	140
16	160	144	135	127	125	118	110	105

[1]Conditioned area shall be applied to each floor of a building to determine the energy budget for that floor. To determine the allowable annual energy budget for the entire building, first multiply the energy budget for each floor by the conditioned area on each floor, then sum the resulting allowable annual energy uses for all the floors. The conditioned area for a given floor is the area of the polygon enclosed by the exterior walls of the building and lying in the extended horizontal plane of the floor.

CHART 2
Alternative Component Packages for Low-Rise Offices
(Climate Zone 13)

Component	Package	A	B	C
Building envelope				
Minimum total roof R-value		12.5	12.5	19.7
Minimum total wall R-value[1]				
Heat capacity				
1.7		12.5	12.5	2.8
4.0		6.8	6.8	2.3
8.0		6.3	6.3	2.3
16.0		5.0	5.0	2.1
25.0		3.8	3.8	1.8
Minimum total floor R-value		12.5	12.5	12.5
Maximum [2] allowed total and west-facing vertical glazing				
Shading coefficient[3]				
1.00–0.75		24%	43%	24%
0.74–0.50		30%	53%	30%
0.49–0.01		41%	64%	41%
Maximum[4] allowed horizontal glazing[5]				
Shading coefficient				
1.00–0.51		N/A	6%	N/A
0.50–0.01		N/A	4%	N/A
Lighting				
Maximum adjusted power density (Watts per square foot)		1.50	1.50	1.40
For all packages A, B and C				
Space conditioning systems allowed		Cooling efficiency	Heating efficiency	Economizer
Package single zone		T.B.D.	0.70	Required
Package variable air volume		T.B.D.	0.75	Required
Air-to-air heat pump		T.B.D.	2.00	Required
Hydronic heat pump		T.B.D.	1.75	Required

[1]Insulation required to meet the total R-value for Package C must be integral with or exterior to the remainder of the wall assembly.

[2]Total glazing allowed as a percentage of total gross wall area and west facing glazing allowed as a percentage of gross west facing wall area.

[3]Maximum shading coefficient for all applicable windows.

[4]Maximum allowed skylight area as a percentage of daylit area where the daylit area is a square centered on the skylight with dimensions sides equal to the floor-to-ceiling height.

[5]Horizontal Glazing (skylights) to glazing whose plane of installation is 60 degrees from the horizontal plane or less.

CHART 3
Office Occupancy Life-Cycle Costs (Fresno)

Measure	Initial Cost ($)	Source kBtu/ft²	Median Price LCC ($1000)
Base	0	217.1	0
Lighting at 1.5 watt/sq. ft.	– 23,578	143.5	– 540.8
30% absorbing glass	1,782	130.0	– 668.7
Economizer	2,318	125.5	– 666.1
R-19 roof (batt)	1.200	124.9	– 667.5
R-19 wall (batt)	2,280	123.8	– 666.3
Double absorbing glass	17,386	120.8	– 644.5

Cost Savings

The new standards will save dollars in two ways. First, initial costs for buildings will be reduced, due to reduced equipment requirements resulting from more efficient lighting systems and smaller HVAC sizes. Second, life-cycle costs for energy will diminish dramatically, due to increased building efficiency. Analyses show initial construction cost savings of $11,200 for the same typical low-rise office in Fresno, with energy-related operational costs reduced by $325,000 over the building's life-cycle.

The low-rise office building analyses, reflecting procedures being followed for other building occupancy categories, establish minimum life-cycle costs—that is, the point at which both energy *and* dollar savings are greatest for a given set of energy conservation investments. The analyses also assess benefit-to-cost relationships. Those measures producing the best results for the lowest costs are introduced in sequence, until the combination with lowest life-cycle cost is reached (Chart 3).

This approach assures that the energy savings from the standards will be at reasonable cost. In fact, the analyses show that standards for low-rise office buildings would *reduce* initial costs when compared with existing Title 24 requirements. The aesthetic qualities and marketability of new buildings will be maintained and even enhanced by the new standards.

Simplified Compliance Procedures

Building contractors and design professionals will find the new standards streamlined significantly in comparison with the current Title 24 requirements. In addition to simplified requirements for documentation at the building permit stage, the new standards also provide for a simple, cost effective set of energy conservation measures that can be applied prescriptively or through the simplified performance approach.

The analyses have taken into account various building permit application and compliance situations, including fast-track and future-tenancy projects. Substantial reductions in the time and effort needed for lighting system design compliance are already envisioned. Room-by-room plan checks would become unnecessary as a total building approach is adopted.

Simplified Design and Analysis Tools

One significant factor preventing more energy efficient design is the lack of simple, low-cost and readily available analysis tools that provide reliable, useful

information on the energy performance of various design measures. The new standards will be accompanied by a range of methods, each suited to application for particular buildings and situations. Designers will find these tools useful not only for demonstrating compliance with the performance approach, but also as a source of valuable information during design development.

The simplified calculation method for smaller, simpler building projects will be available in a manual format, a hand-held programmable calculator format and a micro-computer format.

For larger projects where complex central HVAC systems are employed, a simplified pre- and post-processor for DOE-2—a federally sponsored computer energy simulation program—will be available. The CEC will certify other calculation methods for use in assessing compliance using the performance approach.

Issues of Concern

Issues which concern architects and other design professionals have arisen during standards development. The CEC intends to deal with all important issues during the adoption process. Summarized below are some of the issues identified by design professionals during the proceedings:

Reasonable Standards. During the development process, professionals have continuously raised questions about the "reasonableness" of the standards: can the standards be practically and equitably applied to a wide range of office building types, locations, site conditions, varieties of ownership, client programs and user requirements? Although the CEC and its contractors must use an approach that generalizes over a wide range of building design and operating conditions, the team has responded to industry concerns about over-generalization by remaining conservative in estimating energy savings and construction costs so that all the measures included in the proposed regulations are cost effective. In addition, the proposed standards are based on a poorly oriented and configured building, so that a wide variety of design situations can be accommodated. Finally, for unusual design problems there is a streamlined exception process which allows for design innovation.

Cost Effective Standards. The legislation mandating the standards requires that they be cost effective when compared to "historic building practice." While industry representatives accept existing Title 24 requirements as representative, they often express concern

over the accuracy of construction and operating cost estimates for implementing measures proposed in the standards. In response to these comments, the Commission team took extreme care to document all cost estimates, including material, construction component, labor maintenance and replacement costs. After being reviewed by the Professional Advisory Group, these costs were included as inputs in the life cycle cost analysis model, which also considers interest rates, utility costs, factored demand charges and other pertinent cost factors.

Stringency of the Standards. While reduction in energy use for lighting from 3.1 watts/sq. ft. to 1.5/watts sq. ft. provides the majority of energy savings for the proposed standards, these reductions are a concern to some electrical contractors and design professionals. In calculating reasonable lighting levels for the new standards, the CEC moved gradually from 1.0 to 1.2 to 1.5 watts/sq. ft. This level of power provides a uniform 75 footcandle level of illumination for enclosed 10 ft. square offices, and a 15 footcandle level in circulation spaces. Most industry lighting specialists and electrical engineers participating in the standards process maintain that this level —which is based on IES Lighting Design Standards—is easily attainable, and is being accomplished or improved upon in many office buildings currently under construction. The standards also provide for increased lighting power levels—up to 2.7 watts/sq. ft. equivalent—when daylighting measures are used in combination with automatic lighting controls.

Flexibility of Compliance. Some practitioners and industry professionals are concerned that the proposed regulations will end up being overly complex, because of the sophisticated analytical approach used to develop the standards. They also point out that the detail required to prove compliance may be beyond the normal scope of services provided by all but the largest and most sophisticated A/E firms. The CEC responded by attempting to simplify the new regulations through review of existing Title 24 regulations with industry practitioners and California building officials. The prescriptive approach, in particular, will require simple, straightforward calculations. The CEC also is developing a set of simplified energy budget calculation tools which will reduce compliance calculation time substantially. Since many of the calculation tools are automated, they will produce a standard compliance calculation output statement in a standard format for direct submittal to building officials.

How will the standards be implemented? California building officials, along with

architects and engineers, raised questions concerning the staggered schedule for adoption of particular building types. Currently, the program calls for summer, 1983 adoption of standards for office buildings; December, 1983 adoption of standards for retail and grocery buildings; and adoption of other common building types such as schools, hospitals, hotels/motels at later dates. The standards will become effective at a time that allows designers, builders, and building officials sufficient opportunity to become familiar with them. Also, CEC is planning a one year training program for industry professionals on the use of the standards and tools.

Design Flexibility. Architectural, engineering and industry representatives frequently express concern about maintaining or increasing design flexibility in the new standards. The CEC responded by providing two clear compliance paths —performance and prescriptive. In addition, flexibility is increased within the prescriptive method by the provision of three packages: a conventional construction package (Package A); a package which encourages daylighting (Package B); and a package which encourages the use of mass (Package C). Designers also are given several options for trade-offs within packages, so that there are well over 100 combinations of basic components using the package approach. The performance approach provides unlimited design flexibility, and is augmented by a number of simplified calculation tools.

Will the new standards save energy? Representatives from CCAIA and American Society of Heating, Refrigeration and Airconditioning Engineers (ASHRAE) in particular point out that substantial energy savings occur from building operation and not necessarily from building design. Since the legislation supporting the standards calls for building *design* and *performance* standards and does not deal with direct regulation of *building operation,* the CEC attempted to assure that office buildings built under the new standards will have the potential for cost effective energy conservation, if operated under an average or representative set of occupancy and operating conditions. In this respect, the standards assure a long term investment in cost effective, energy efficient buildings that will accrue benefits to current and future building owners and consumers in California.

John R. Schade is the Technical Program Director, Building and Appliance Standards Office, California Energy Commission. He formerly was a consultant for Johnson Controls Incorporated and a program manager for the AIA Research Corporation.

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